

Flight, May 27, 1911.

# FLIGHT

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**MONOPLANE VERSUS 60-H.P. CAR.**—Last week at Brooklands a test of speed was tried between Mr. Hubert Latham on an Antoinette monoplane and Mr. Gordon Watney on a 60-h.p. Mercedes car. In our photograph, which is a specimen of an "unfaked" negative, the race in progress is seen.

## A WORD OF CAUTION.

A SCARE of quite considerable dimensions has recently been raised about the probability of venturesome aviators seizing on the Coronation as a suitable time to display their mastery of the art of flying to the masses who will congregate along the routes of the processions. To read all that has been written around the subject, the ordinary observer might almost gather that something in the way of a reliability-cum-circus trial had been planned and that the very heavens were likely to be obscured by clouds of aeroplanes hovering over Westminster Abbey and the processional route. The whole thing appears largely to have been the outcome of the flying which was a feature of Boat Race day; and because, forsooth, a few aviators flew their machines over the Thames on that occasion it has suggested itself to the fertile imaginations of some writers who ought to know very much better that some of the flying men are certain to take chances by flying over the crowded streets during the Coronation festivities. For our own part we cannot bring ourselves to think, that any such insane idea can have taken permanent shape in the mind of a single qualified flying man. In the second place, overhead wires and such like details cannot be altogether ignored even by an aeroplane; and absurdity is writ large over the very idea that the occupants of stands could be given any view at all of men flying about away above the roof tops. Nevertheless, the Royal Aero Club has done well officially to issue its threat of cancelled pilotage certificates, thereby effectually laying the journalistic bogey—though we cannot but regard the subsequent Parliamentary interference as being unnecessary, unfortunate and undignified.

Concerning this scare we cannot refrain from putting on record our disapproval of the manner in which it has been worked up by some who are presumed to have the good of the movement as almost their single aim in life. To write flamboyantly of the terrible danger which would result to the populace if someone insisted upon doing what he has never seriously contemplated may be good enough journalism, but it is certainly not playing the game so far as the advancement of the movement is concerned. It is the greater pity that this should have been done just prior to this week's terrible accident in France, when the French Minister of War lost his life and the Premier was badly injured, since that accident has inevitably and vividly drawn public attention to what can happen on a crowded flying ground if an aeroplane should run amok. The accident itself was bound to have created an adverse opinion in the minds of many who do not trouble to analyse cause and effect, so that here in England the movement is bound to receive a distinct temporary set-back, unless people can be induced to view the question in a sane and sensible light.

We can quite imagine the man in the street reasoning to himself that if this sort of thing can happen on a huge flying ground, kept and patrolled by police and soldiery at the start of a big organised event, something worse is likely to happen when the aeroplane comes to be used by the public and among the public. This is precisely the view one would expect to find taken by the man who, as we have said, does not trouble to analyse the matter out into its constituents.

On the whole, we are pleased to note, the Press has taken an extremely sensible and broad-minded view of the unhappy occurrence. There is one peculiarity, however, which we notice, and that is that an almost universal parallel has been drawn between this unfortunate

affair and the Paris-Madrid race of unhappy memory which was responsible for so many accidents in the summer of 1903. But most of those who have drawn the comparison appear to have missed the salient point, which is that races like the Paris-Madrid motor race and this latest aerial race between the same two points present quite the most favourable conditions for accident. It was indeed so too in the earliest of the railway days, for was not Mr. Huskisson, M.P., killed at one of the first demonstrations? On the face of things it would be thought that careful organisation would almost eliminate all chance of accidents to any except possibly the flying men themselves. One reads in the newspapers of the number of troops and police told off to guard the starting point and to line the route, and of all the manifold precautions provided so that the safety of spectators and general public might be adequately ensured. But what those who are not familiar with such races do not realise is that all the arrangements which look so well on paper have a habit of going to pieces in actual practice. We are speaking especially, of course, of the way things are apt to be done at these times of popular excitement in France. We know from personal observation what caused the holocaust in the race of 1903—it was simply that there was present every element for the manufacture of catastrophe. Competitors, spectators, troops and police were the victims of the most intense excitement. Drivers were excited at the prospect of what they were about to encounter; the crowd was excited because it wanted to get as near to the racers as it possibly could; and the guardians of law and order caught the prevailing fever and proved utterly incapable of handling things.

It seems pretty clear that much the same basic cause was at work in this latest calamity, it having been proved before the judicial tribunal that neither the aviator nor the machine was in any way at fault. As usual the possibilities of accident were nothing more nor less than those peculiar to the very nature of such occasions. Even the most phlegmatic are apt to be carried away—as witness the state of excitement into which even a British crowd can work itself when the Derby horses are seen coming round Tattenham Corner. Of course, it is not necessarily the case that because excitement runs high there must be accident, but there is no controverting the fact that the conditions are more favourable in the one case than in the other. The trouble is, however, that untoward occurrences are too apt to be judged simply on themselves and without due weight being given to the surrounding circumstances. To state the case briefly, we have the start of a big race of a kind which at the time is still a novelty; everyone is of necessity excited and one or two possibly lose their heads; an accident happens, and, *ergo*, the whole sport of flight is thought to be a dangerous menace to the public safety. In 1903 people threw up their hands in horror when the motor car was mentioned and whispered with bated breath: "Paris-Madrid!" Few outside those interested in the movement took the trouble to examine into exactly why the deplorable accidents which characterised the race happened—the motor car was a terrible engine of destruction and that was all there was to it. We trust that the aeroplane will not be equally condemned by the man in the street simply because of even so terribly sad an accident as that which has once more called forth from all countries and from all classes an expression of the deepest sympathy with progressive France.

## PARIS-MADRID RACE.

WITH the same breath that everyone on Sunday expressed their horror at the national loss sustained by France in the death of M. Berteaux, the Minister of War, at the start of the Paris-Madrid race from Issy, it was universally acknowledged that in no real sense could either the pilot himself, M. Train, or aviation be blamed for the catastrophe. With every sympathy going out to all concerned in the terrible business, it must be evident from the first that no trouble would have arisen either to the aviator or any of the public had the intense excitement at the meeting not largely broken down all restraint and gradually induced the spectators and a group of leading officials to encroach very seriously upon the clear ground marked out as for the use solely of the flying men and the necessary officials controlling them. That the opening of the first great international cross-country meeting should be marred by this sad result will for a long time be as a cloak of sadness upon the whole of those associated together in sympathy with the future of aviation. But that it should be allowed to set back the steady advance of the art for even one day is not thinkable. That this is so is fully apparent from the immediate action of M. Monis, the French Premier himself. When consulted on behalf of the French Aero Club as to the cancelling of the whole race—they having temporarily suspended proceedings—he at once replied that the race was to continue as if nothing had happened. And so his commands were respected, and all the aviators who had not started on the Sunday in their turn were duly notified that they could take their place in the race on the Monday morning instead, all other conditions being left as they were originally.

It remains only to note with great thankfulness that at the time of going to press, following the death of M. Berteaux, the very greatest progress is being made towards recovery by M. Monis, the Premier, who is the next most seriously injured, as also his son, M. Antoine Monis, and M. Henri Deutsch de la Meurthe, the

very generous sportsman who has so consistently supported both automobilism and aeronautics in the past ten years. The feelings of M. Train, the aviator, under all the conditions, may well be understood, and it must be a source of very great relief to him to have so speedily learned the result of the judicial inquiry which was at once set in motion into the exact causes of the accident. By this the examining magistrate has completely exonerated him from the slightest imprudence or negligence from first to last, he advising that no indictment of any kind could possibly be made against M. Train, who had undoubtedly done his best when the crisis arose. M. Train's own explanation of the accident before the judicial tribunal was as follows:—

"I started with the intention of making one or two circuits of the field, so as to be able to judge whether everything was going well, and to land in case there was anything to be done.

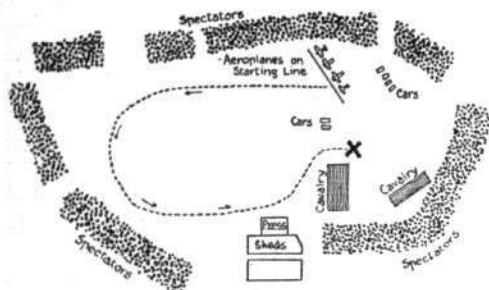
"As soon as I left the ground, I perceived that the motor was not working well. I was about to land, after making a turn to one side, when I saw a detachment of cuirassiers crossing the flying track. I then tried to make a short curve to avoid them, and to land in the opposite direction, but my motor at that moment failed more and more, and I was unable to undertake the curve. I raised the machine, so as to get over the troops and to land beyond them. At that very moment a group of persons, who had been hidden from my view by the cuirassiers, scattered before me in every direction. I tried to do the impossible, risking the life of my passenger to prolong my flight, and to get beyond the last persons of the group. I was about to come to land, when the apparatus, which had been raised almost vertically, dropped heavily to the ground. I got out from under the machine, with my passenger, believing that I had avoided any accident. It was only then that I learned the terrible misfortune."

M. Bonnier, the passenger who was flying with M. Train at the



PARIS-MADRID RACE.—General view of a corner of the Issy starting grounds, with its huge fringe of people looking more like bees swarming than humans, on the morning of the sad disaster on Sunday last whereby the French Minister of War lost his life.

time, corroborated in every way the story of M. Train, and by a number of witnesses of the whole of the event not one disagreed as to what took place. As it was pointed out, M. Train was flying



**THE ISSY ACCIDENT.**—Diagrammatic plan of the course, indicated by the dotted line, taken by Train on his monoplane. The X is the spot where the accident actually occurred.

over the ground reserved entirely to aviators, and nobody, according to the regulations drawn up, was entitled to be on this open space during the starting. No doubt a great amount of sympathy is due to the organisers and the authorities who had charge of the keeping of the ground, as although four regiments of infantry and two squadrons of cavalry were present, besides many thousands of police, to keep order, with such a concourse of people—estimated at no less than 400,000—it was hopeless, against the will of the public themselves, to keep them in check very long. And without question this persistence on the part of the public led to the catastrophe for which the whole world now mourns with France.

From the diagrammatic sketch of the Issy grounds, showing M. Train's course after starting, it will easily be seen how the flying section of the grounds was invaded by the public, as they had pressed forward well up behind the squadron of cavalry immediately by the side of where the tragedy took place. It was M. Berteaux himself who, but a few seconds before he was struck down, suggested that they, the official group then in the middle of the grounds, should set a good example to the rest of the crowd by retiring to their proper places behind the barriers, thereby recognising without question the danger of the over-confidence which seemed to have

taken possession of both public and officials. That a national funeral is to be accorded to the Minister of War was almost a foregone conclusion, and this honour to him will finally and worthily close the career of a man who has been a great friend to the art and progress of aviation.

One of the first to convey their sympathy to France in their bereavement was King George, through the British Ambassador in Paris. This was quickly followed by similar messages of regret and sympathy from Germany and all the leading countries of the world, as also the Royal Aero Club and other bodies so immediately associated with the industry.

## The Race.

Dealing with the race itself, under all resulting conditions it cannot be regarded as having materialised very successfully, although as individual performances the work of Vedrines and Garros will stand out in bold relief in the history of Aviation. It was divided into three daily stages—(1) Issy to Angoulême, 400 kiloms.; (2) Angoulême-San Sebastian, 353 kiloms.; (3) San Sebastian-Madrid, 462 kiloms. Commencing some hours before midnight, crowds began to flock towards Issy, the roads being a mixed mass of people, on foot and on bicycles, motor cars, and vehicles of every description, the one point made for being the great military flying grounds, so that by 3.30 a.m. on Sunday there were already some 200,000 of the public lining the aerodrome in anticipation of the great event. Apparently ample provision had been made for handling the crowd, four battalions of infantry being under the charge of Col. Bachlard and Col. Ferry, in addition to the squadron of cavalry under Col. Ancelin and some thousands of police, detailed off for the special duty. These were all in place by two o'clock in the morning, although the official start was not timed before five o'clock. By 3.45 some trial tests by aviators were started. Simultaneously orders were issued to clear the entire field, and with commendable promptness, the infantry, cavalry and police acting together speedily had the whole of the public well behind the prescribed barriers, leaving the open grounds for the full use of the competitors and officials. Within five minutes afterwards a flyer—Vedrines—was in the air, and he speedily returned to earth completely satisfied with the working of his Morane-Gnome machine. Frey, also on a Morane-Gnome, afterwards made a short essay and found everything working equally satisfactorily. A few others were tuning up their engines and running their machines around, every movement being keenly watched by the huge circle of onlookers. At half-past four M. Monis, the Premier, arrived by motor car, and from this moment all the high-placed Government representatives soon followed and were in and about the official tribune.

In the meantime the competitors who were down to start first

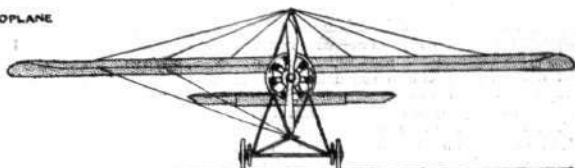
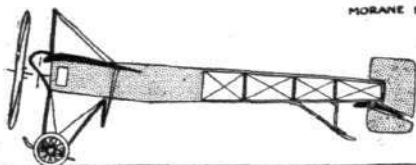
## PARIS-MADRID RACE.—Table of characteristics of entered machines.

Pilot and Machine.	Supporting Area.	Weight.			Span.	Length.	Balancing.	Under-carriage.	Suspension.	Control.			Engine.				Propeller.					Flight Speed.
		Empty.	Flying.	Span.						Balance.	Elevator.	Rudder.	Make.	h.p.	Cyls.	Bore.	Stroke.	Make.	Dia.	meter.	Pitch.	
Védérines (Morane) ...	187	440	770	30	8	22	0	W W & s R	Lever	Bar	Gnome	70	7	130	120	Integrale	9	35	11	2	1200	77
A. Frey (Morane) ...	187	440	770	30	8	22	0	W W & s R	"	"	"	50	7	110	120	"	8	75	5	2	1100	68
Weymann (Nieuport) ...	196	750	1100	33	0	27	10	W W & s S	Pedal	Lever	"	70	7	130	120	"	8	100	7	2	1200	77
Chevalier (Nieuport) ...	196	720	1050	33	0	27	10	W W & s S	"	"	"	50	7	110	120	"	8	75	5	2	1100	71
P. Divetain (Goupy) ...	235	440	770	19	10	23	0	F W & s R	"	Wheel	"	50	7	110	120	"	8	75	5	2	1100	53
Ladougne (Goupy) ...	235	475	835	19	10	25	0	F W & s R	"	"	"	70	7	130	120	"	9	35	11	2	1200	62
Prince de Nissole (Tellier) ...	240	680	1100	38	8	36	5	W W h S	"	"	R.E.P.	60	5	110	160	—	—	—	—	—	1300	46
Mamet (R.E.P.) ...	214	880	1320	36	5	26	5	W W & s R	Lever	Lever	"	60	5	110	160	Regy	8	14	10	2	1300	65
Amerigo (R.E.P.) ...	214	880	1320	36	5	26	5	W W & s R	"	"	"	60	5	110	160	"	8	14	10	2	1300	65
P. Barillon (Barillon) ...	160	480	1000	39	0	29	10	W W & s R	Wheel	Bar	Gnome	50	7	110	120	Voirin	8	1	Var.	2	1100	80
Le Lasseur de Ranssay (Blériot) ...	187	550	880	29	5	25	4	W W h R	Lever-wheel	Bar	"	70	7	130	120	—	—	—	—	—	1200	62
Bobba (Goupy) ...	288	510	835	29	10	23	0	F W & s R	Wheel	"	"	70	7	130	120	Integrale	9	35	11	2	1200	59
A. Beaumont (Blériot) ...	187	510	835	29	5	27	0	W W h R	Lever-wheel	"	"	50	7	110	120	—	—	—	—	—	1100	59
Garros (Blériot) ...	187	510	835	29	5	25	4	W W h R	"	"	"	50	7	110	120	Integrale	8	75	5	2	1100	59
Gibert (Blériot) ...	187	510	835	29	5	25	4	W W h R	"	"	"	50	7	110	120	"	8	75	5	2	1100	59
Train (Train) ...	171	420	770	26	5	26	5	W W & s R	Lever	"	"	70	7	130	120	"	8	105	11	2	1200	62
L. Garnier (Morane) ...	187	570	900	30	8	22	0	W W & s R	"	"	Labor	70	4	100	120	"	9	35	11	2	1150	77
Verrept (Morane) ...	187	440	770	30	8	22	0	W W & s R	"	"	Gnome	50	7	110	120	"	8	75	5	2	1100	68
Lieut. Menard } (H. Farman) Capt. Etévé } M. Dové }	750	1100	1800	53	0	43	0	F W & s R	"	"	"	50	7	110	120	"	8	75	5	2	1100	46
F. Barra (M. Farman) ...	640	—	{ 53 } { 36 } { 5 }	0	42	5	F W & s R	Wheel	—	Renault	60	8	—	—	—	"	8	75	5	2	900	50
Lieut. Tretarre (Breguet) ...	394	1100	1600	46	6	27	3	W W & s P	Wheel	"	R.E.P.	60	5	—	—	Regy	8	04	4	2	1300	56

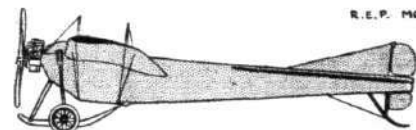
Notes.—W = Warping. F = Flaps. W & s = Wheels and skids. Wh = Wheels. R = Rubber. S = Springs. P = Pneumatic.



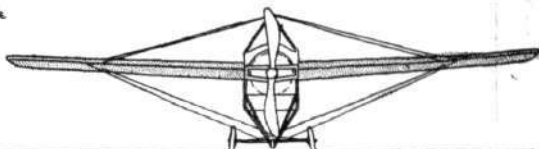
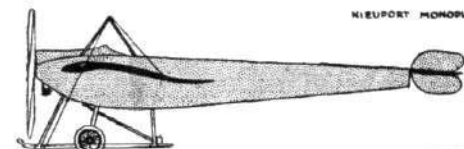
MORANE MONOPLANE



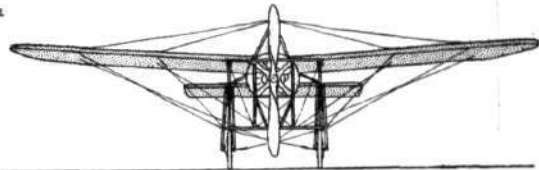
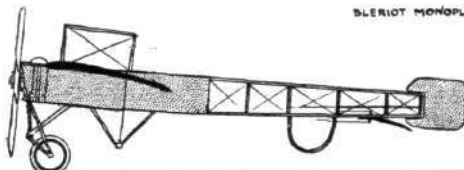
R.E.P. MONOPLANE



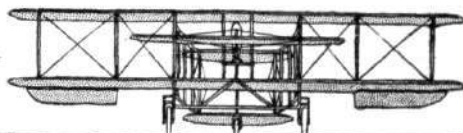
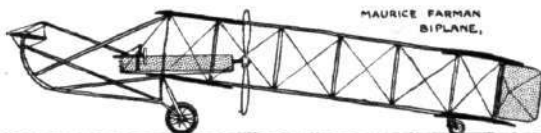
NIEUPORT MONOPLANE



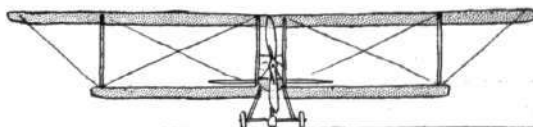
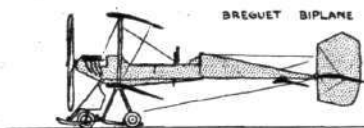
BLERIOT MONOPLANE



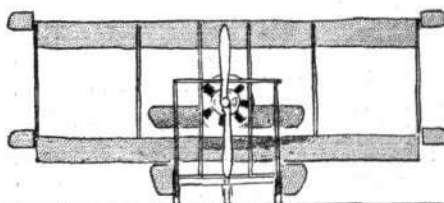
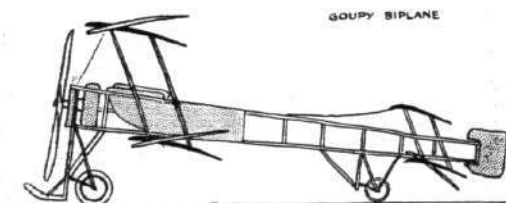
MAURICE FARMAN BIPLANE



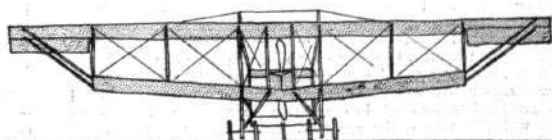
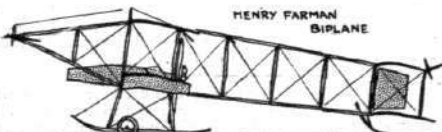
BREGUET BIPLANE



GOUPY BIPLANE



HENRY FARMAN BIPLANE



PARIS-MADRID RACE.—Diagrammatic sketches of some of the machines entered in the race. Dimensions and other particulars will be found in our table.

were getting their machines into line, the first to be actually dispatched being M. Beaumont—who in real life is Lieut. Conneau—on his Blériot-Gnome, at 5.10 a.m. He rose within 15 metres, and rising rapidly circled round the aerodrome and made straight away across the Petits Menages Hospital, round the clock tower, disappearing rapidly in the distance in a straight line for Angoulême.

The next to rise at the specified interval of five minutes was M. Garros, also on a Blériot-Gnome, who was timed away at 5.15. With a masterly start, without a quiver, he followed in the wake of Beaumont, and in this competitor was ultimately found the only one to arrive that day at the end of the first stage at Angoulême. Following him at 5.30, although timed away at 5.20, was M. Gibert, again on a Blériot-Gnome. He got as far as Pont Levoy only, some 220 kiloms. out. By way of neutralising these excellent starts, some contrasts immediately followed. M. Frey, who was timed away at 5.35, on his Morane-Borel-Gnome, covered a circuit at a good height, and then, finding his machine was not quite up to his liking, re-descended, later making a second attempt to take the air at 6 a.m.

Blériot-Gnome, was timed at 6.22, making a fine circuit of the grounds, and passing away on his journey at a good altitude. His actual official time for leaving was 5.5 a.m. M. Ranssay got as far as Cosne, having covered 180 kiloms. Then followed, at 6.30, the start of M. Train, which ultimately resulted in the terrible catastrophe already dealt with earlier.

It is surprising that no more trouble ensued from the result of a mild panic, lasting some fifteen minutes following the disaster, than a number of people more or less bruised and slightly injured, totalling up to possibly fifty or sixty, who, however, one and all were able to be dealt with at the ambulance station adjoining the aerodrome.

After this all proceedings were stopped by mutual consent, led by the French Aero Club, the latter determining to take at the earliest moment the views of the Government officials as to whether the whole race should forthwith be cancelled or proceeded with to the end, with the result that M. Monis, the Premier, decided that the race should go on as if nothing had happened. Notice was thereupon issued that those aviators who were still willing to take



PARIS-MADRID RACE.—A snap just before the accident at Issy resulting in the death of M. Berteaux. M. Berteaux is in the centre of the group, on the right is M. Monis, and on the left M. Louis Blériot and General Maunoury.

This time a tyre of the landing chassis gave trouble, and obliged him to give up, which he did with great reluctance. Verrept, on a Morane-Gnome, was "called" at the starting-line at 6.10, but he not being ready, the starters had to patiently wait for the next man. Then it was M. Garnier's turn on another Morane. He, however, merely made the smallest of flights by way of formally taking his start, then returning to his hangar.

It was about this time that the pressure of the crowd began to show signs of breaking down the barriers in several directions, and the authorities seemed more or less powerless to cope with the encroachment, although they did their best. M. Lepine, the Prefect of Police, ordered them to be charged and brought back to their bearings, and for a time this manoeuvre proved effective, only, however, to be later again completely neutralised. At 6.20, Vedrines on a Morane started. His was a bad get away, and apparently things were not working well, so that he seemed to lose guiding control. It appeared as if he were making direct for the spectators, and in order to avoid a catastrophe he appears to have deliberately laid himself upon one of the wings and by that means capsized the machine, he going over with it, but so cleverly did he manage it that he escaped without the smallest injury, the machine, however, being damaged. He first proposed to make repairs and re-start, but later he elected to take another machine of the same type, which the rules of the race permitted. During the preparations of Vedrines for this second start, Le Lasseur de Ranssay, on a

part would be at liberty to make their official start the following morning, commencing at four o'clock, until which time all further proceedings were suspended.

The result of the day's flying was as follows:—

Garros arrived at Angoulême (400 kiloms.) on his Blériot in 4 hrs. 52 mins.

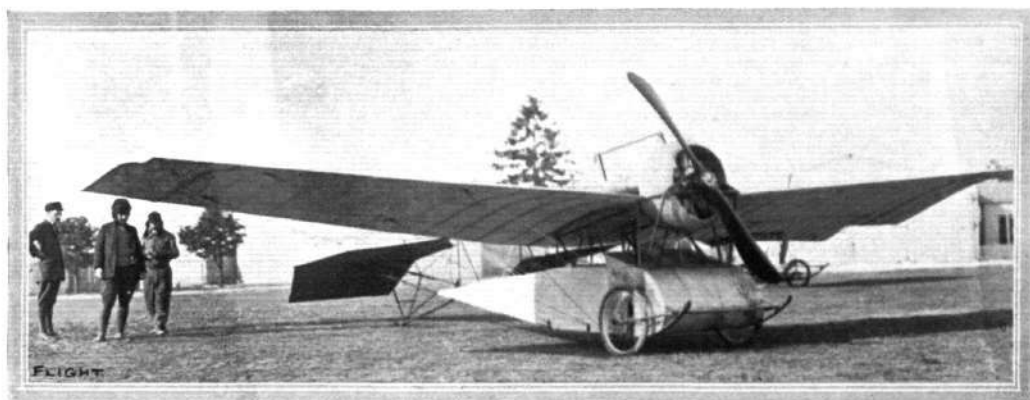
Beaumont descended at Loches (215 kiloms.). It appears he descended to put in new sparking-plugs, and when re-starting for his journey he was unable to clear a big clump of trees and an extensive horse-pond, and unfortunately crashed into the trees, completely putting his machine hors de combat.

Gibert stopped at Pont Levoy (220 kiloms.) having arrived there from Etampes in one hour, he being there forced to alight by a violent wind. Having then heard of the catastrophe at Issy, he decided to remain where he was and not re-start.

Le Lasseur de Ranssay stopped at Cosne (180 kiloms.), finding it impossible to continue by reason of a dense fog which had arisen.

In regard to the officers who were not in any case in competition with the other flyers, none of these started owing to the grievous disaster which overtook the Minister of War.

On Monday morning those who were entitled to make a start were mostly early on the grounds. In contrast to the previous morning Issy was comparatively deserted, and the military and police had little difficulty in regulating the gathering of the public



**THE TRAIN MONOPLANE.**—View from in front of the Train monoplane which was involved in the catastrophe at Issy at the start of the Paris-Madrid Race. M. Train has embodied in his design a system of under-carriage somewhat similar to that evolved by M. Pischhoff, the aviator being seated below the plane and protected by the covered-in body.

upon this occasion. The first to be sent off was Vedrines, on No. 14 Morane, which he had taken over from Verrept, thus eliminating the latter from taking further part in the contest. Rising slowly from the ground at 4.11 a.m., by the time he was passing away to the south he had attained a good height, and within two or three minutes was completely lost to view in the thick mist which enveloped the whole district. Without halt Vedrines steered for Angoulême, reaching there without a descent of any sort at 7h. 54m. 16s. by the clock, thus having actually covered the distance in 3hrs. 43mins. For the moment the time with which he will be debited is 4h. 24m. 7s., which includes 30 mins. penalisation for having not started from Issy the previous day on his second machine, after having damaged his first, plus a few minutes that he lost after being timed officially away originally.

Of the others, Weymann abandoned the race, and Train was not prepared to take part. Mamet and Amerigo, who had been delayed by the fog, proposed to start, but found that they would be disqualified for the first stage owing to the parts of their machines not having been officially stamped, and rather than suffer this handicap they also renounced their rights. Therefore the only one remaining was Frey, who, on account of the dense mist, did not feel inclined to take the air, and when it was thought that all willing competitors had thus taken their turn, in the afternoon at 2.5 p.m., Frey made his start but came down again at Etampes, and in consequence of his machine being damaged finally abandoned participation in the race. In the meantime Gibert, who had the previous day descended at

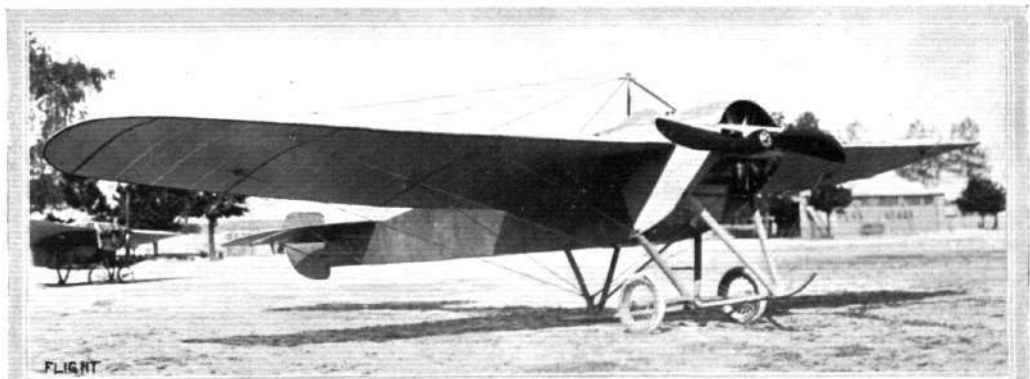
Pont Levoy, re-started from there at 4.10 on Monday morning, but had to return to the aerodrome in consequence of the dense fog. Re-starting at 6.20, he alighted at Brizay at 7 a.m., having lost his way, leaving there again at 9 o'clock to arrive ultimately at Angoulême at 10h. 54m. 58s.

De Ranssay, who had stopped at Cosne, made a start in the morning, but had to come to earth again at Aix d'Angillon, from whence he hoped to re-start again on Tuesday morning, and continue in the race.

Owing to the slackness of the race at Angoulême, the people who had paid their money to witness the end of this first stage of the event were inclined to create trouble, clamouring for the return of their entrance fees, but by judicious handling no really serious trouble ultimately arose.

The provisional classification therefore at Angoulême is (1) Vedrines, 4h. 24m. 7s.; (2) Garros, 4h. 52m.; (3) Gibert, 29h. 24m. 53s.

Garros, however, protests strongly against Vedrines being classified as first, as he maintains that he, after being sent away, was the sole competitor who reached the end of the first section the same day, whereas Vedrines damaged his machine, and although he flew the distance on the next morning in a single stage, his time should count against him in the classification as from the original start. Moreover, Vedrines was favoured with very much better atmospheric conditions than on the previous day. Vedrines, on the other hand, points out that he was ready on Sunday to put right any little damage that was



**THE TWO-SEATED NIEUPORT MONOPLANE BUILT TO COMPETE IN THE PARIS-MADRID RACE.**—It will be observed that the framework of this machine is entirely covered so as to present minimum resistance to the air, while the chassis is made amply strong in view of landings which might have to be made unexpectedly and on rough ground.

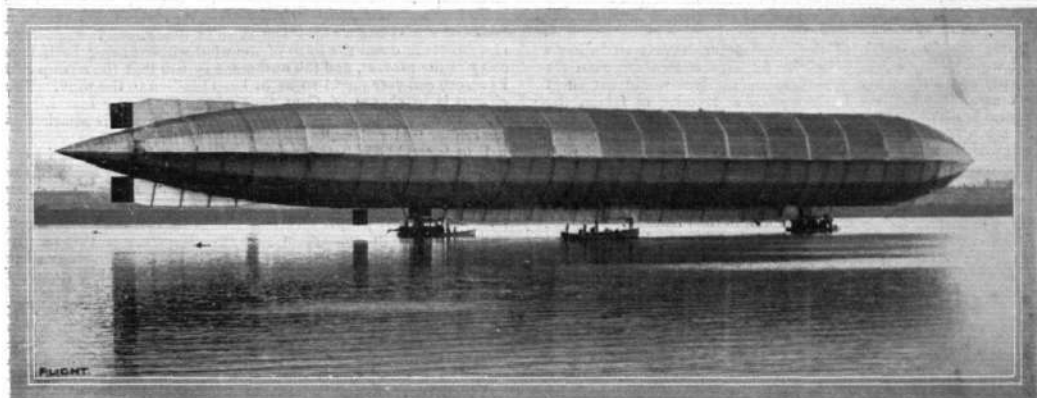
On Tuesday the three competitors remaining in all reached the end of the second section, San Sebastian. Gibert was the first to start on his Bleriot at twelve minutes past five, two minutes after his official starting time (5.10). Garros, whose official time was 5 hrs. 5 mins., did not get on his way until 5h. 19m. 25s., and Vedrines, who should have started at 5 o'clock, waited two hours and a quarter for the mist to clear before he set out. Gibert and Garros passed over Libourne, Bordeaux, and various other points of the route within a few minutes of each other up to Bayonne when Gibert's motor began to give trouble. Just previous to this he had lost his way in the fog and was for some considerable time over the sea. He ultimately landed at the Bayonne Aerodrome about 9 o'clock. He spent best part of the day making repairs and adjustments to his machine, and did not get away again until 6h. 14m. in the afternoon, arriving at San Sebastian at 6h. 22m. 22s. p.m.

On Wednesday the aviators rested at San Sebastian, their final day's journey on Thursday being to Madrid.

Satisfaction is expressed by the Parliamentary Aerial Defence Committee at the reception accorded to the deputation. In the course of an interview subsequently, Mr. Arthur Lee, M.P., said that when the Government had had time to consider the arguments that the deputation advanced, the whole question would be raised in the House of Commons, so that they might have the opportunity of making a definite announcement as to what they were doing. The Parliamentary Aerial Defence Committee would continue to press the matter until they were satisfied that adequate means were being taken to protect the interests of the nation in this respect.



## THE NAVAL AIRSHIP.



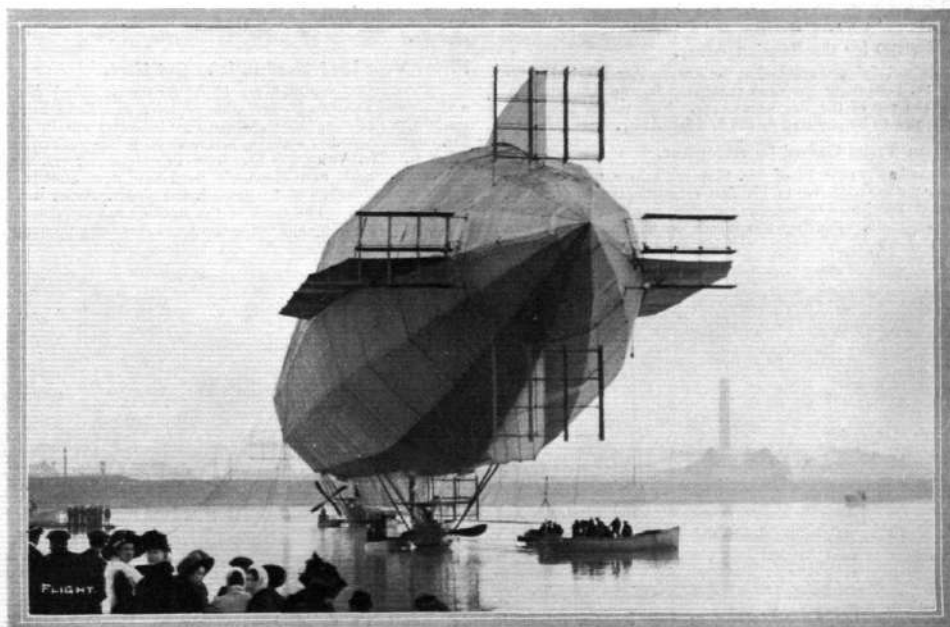
THE NAVY AIRSHIP NO. 1.—The "Mayfly," built by Messrs. Vickers, Ltd., which was successfully launched at Barrow on Monday last. The rudder and elevating planes are clearly seen in this view. Note, the launch in the centre is merely assisting in guiding the airship.

At last our leviathan of the air has emerged from the interior of its hiding place into the full light of day. With the issues of Monday's evening papers the launch was announced, and with the Tuesday morning papers the British public realised all in a moment its full possession of the object of its desires—an immense dirigible. And it is an immense dirigible, too, indeed the largest in existence. Over 170 yards long, no less than 16 yards in diameter. Think of it! It would almost exactly fill the whole of St. Martin's Lane from side to side and from end to end. It has a gas capacity of 700,000 cubic feet, a lift of 21 tons, its engine power is no less than 400-h.p. in two equal units formed by Wolseley engines. It can carry twenty-two persons and has cost up to date the sum of £41,000. More than an acre and a half of Continental fabric was employed in

the construction of the envelope, and the hydrogen, compressed in cylinders, was brought over from the Knowles Oxygen Co.'s works at Wolverhampton by the train load at a time.

During two years this airship has been in the course of design and construction, and the lines on which it is built are broadly similar to those of the famous Zeppelin airships that have created so many sensations in Germany. We will at least hope that the English vessel will be more fortunate. Its constructors are the great firm of Vickers, Ltd., and the site of the operations, as all the world knows, has been Barrow-in-Furness. The outer cover and the gas ballonets were made by Messrs. Short Bros., and the airship is fitted with their patent valves and rudders.

The characteristic feature of the type to which it belongs is the



THE NAVY AIRSHIP, THE "MAYFLY."—View of the rear end of the great airship, showing more clearly the elevating planes, stabilising fins, propellers, &c.

rigidity of its envelope, which has an interior skeleton framework made of duralumin, the new light aluminium alloy. This framework maintains the shape of the envelope, which is thus not dependent on the gas pressure as it is with airships of the non-rigid type that are intended to be capable of being folded for transport by land.

Inside the framework of the envelope are seventeen balloons filled with hydrogen, each balloon forming a separate gas-tight chamber of its own, and if deflated by accident would not affect the others. Outside the framework is a covering of fabric, the appearance of which is somewhat distinctive owing to the upper part being silver-grey and the lower half yellow in colour. The upper part is as far as possible a non-conductor of heat, and thus minimises the effect of the sun's rays on the expansion of the gas. The lower part, on the other hand, is a conductor of heat and thus facilitates the proper equalisation of temperature between the gas and the atmosphere to be carried on in a normal manner.

In accord with the most modern theories of streamline form, the envelope is cylindrical in the middle, with tapering extremities. The nose is blunter than the tail. On the tail of the envelope or hull, as it may be termed because of its rigidity, are the directive organs, consisting of four stabilising fins (two vertical and two horizontal), two sets of quadruplane rudders, and two sets of triplane elevators. There is also an elevator under the bows, and another rudder right under the stern, these latter being both situated near to the cars. Beneath the hull are two 20 ft. cars or boats, joined by a gangway. In front, the engine drives two four-

bladed propellers, carried on outriggers beneath the hull; at the stern there is a single two-bladed propeller.

Water ballast is employed, and the estimated speed of the airship is 40 m.p.h. For mooring purposes the bows of the airship are anchored to a mast rising from a kind of raft, which also carries a great net screen like a sail. The mesh of this screen is sufficiently close to break down the force of the wind without being itself torn away in the process, and the anchorage is such that the airship and its screen can veer round so as to keep head-on to the wind. The airship is in charge of Capt. Sueter, who has under him Lieuts. Osborne and Talbot. The parent ship to which she is attached is the cruiser "Hermione."

It took 300 bluejackets less than an hour to haul the airship out of her shed and get her safely moored in Cavendish Dock in the early hours of Monday morning, May 22nd. To be precise the performance commenced at ten minutes past four, and was all over long before most people had waked from sleep. One of the most striking sights in connection with the launch was the sudden appearance of sailors on the very top of the envelope, where there is a prepared gangway, and access to which is obtained by means of a rope ladder through the centre of the envelope itself.

On Tuesday a fairly stiff breeze served to test the mooring arrangements reasonably, and the Naval officers, in order to watch her behaviour in the full strength of the 30-mile breeze, removed the protecting screen, the result being eminently satisfactory. An "eye" is kept upon her during the night by means of a search-light.

## BRITISH NOTES OF THE WEEK.

### Matters of Moment.

AGAIN this week in the Official Notices of the Royal Aero Club, on page 465, will be found many items of general interest to our readers. Salisbury Plain, at the request of the War Office, is to be included as a stopping place in the £10,000 *Daily Mail* prize, and particulars are given in regard to the arrangements made at many of the chief controls round Great Britain in this event. Some details as to the arrangements for viewing the Gordon-Bennett Race at Eastchurch are also published.

### Our Prize Model Scheme.

FURTHER contributions have been received in connection with our Prize Model Scheme from the following:—  
C. W. Gore. P. W. Peel.

### Another Bristol for the Russian Army.

THE Bristol biplane exhibited at the Russian Aeronautical Exhibition at St. Petersburg has been purchased by the Russian War Office for the use of the Engineer Corps. This makes the ninth Bristol machine to be acquired by the Russian Army.

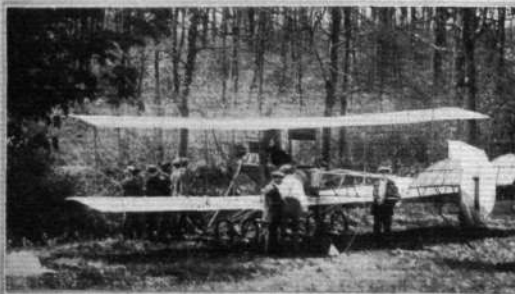
### Mr. Latham Visits Oxford by Aeroplane.

IT was a happy thought of Mr. Hubert Latham to select his *alma mater* for the objective of his first cross-country trip in this country, and Oxonians were keenly appreciative of the honour thus conferred on them. Leaving Brooklands on the 19th inst. at five

minutes past twelve, Mr. Latham was able to pilot his Antoinette monoplane by the aid of a Clift aeroplane compass and a special map over the 55 miles which separate Brooklands from Oxford in 65 minutes. Some of the aviator's friends at Oxford had been apprised of his starting and a crowd quickly gathered at Port Meadow to welcome him. After lunch, Mr. Latham returned to the Meadow and made several circuits accompanied by Mr. C. B. Gull, and then, at three minutes to six, Mr. Latham set out for his return to Brooklands. Unimpeded by a headwind such as somewhat slowed him on the outward journey, Mr. Latham came down at Brooklands after a flight of 53 minutes. The weather was fine, and although there was a little mist about Mr. Latham said he was able to see for about ten miles. On arriving at Brooklands he was at a height of 1,000 feet, but when arriving at Oxford he was at about double that altitude.

### Flyers Visit Lord Northcliffe at Guildford.

SUNDAY last was quite a field day for the Guildford district, as a number of aviators, by invitation of Lord and Lady Northcliffe, made trips to Sutton Place, where a garden party was in progress. Mr. Grahame-White, with his mechanic as passenger, arrived from Hendon. Mr. Astley flew over from Brooklands for tea. Messrs. Snowden-Smith and Hewlett's machines were already there, occupying the middle of the ground, and so Mr. Astley was forced to land across it. The speed of the machine was so great that she was unable to pull up and ran over a brook, breaking three saplings,



Mr. Pixton and the Avro biplane at rest for the night in Mr. England's grounds at Oakwood, Hayward's Heath, May 7th and 8th, en route for Brooklands upon his return flight from Brighton after the recent Brooklands-Brighton Race. On the left the Avro anchored for the night, and on the right ready for the start next morning.



The "A.B.C."-engined "car" which was at Brooklands recently, after travelling by road from Southampton under its own power by means of the propeller seen behind.

eventually running up against an oak tree, where she came to rest. The extraordinary part is that only the leading edges of the wing were damaged, although one would have expected them to have been torn off.

Mr. Hubert Latham and Mr. Hamel were also amongst the aviators at Sutton. The latter, when making some evolutions around Lord Northcliffe's seat, had a little mishap, in which his machine had a difference with a ditch, in which the latter was victor. Fortunately, Mr. Hamel got nothing worse than a shaking.

#### Harrogate and the Daily Mail Prize.

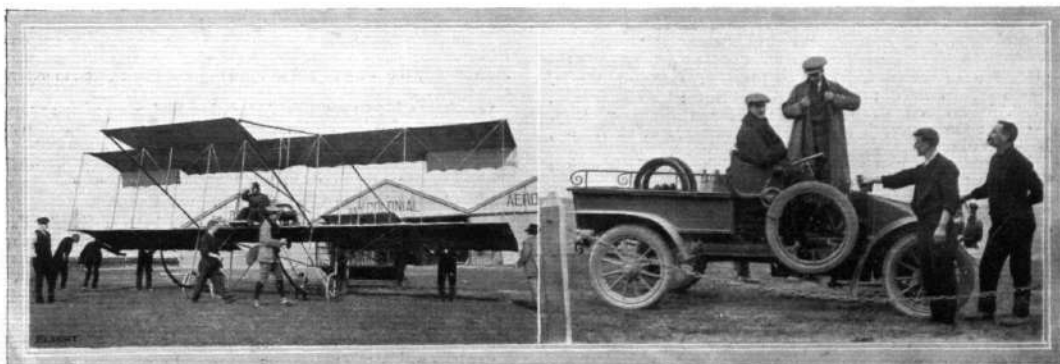
THE Harrogate "control" in the circuit round Great Britain has been decided upon. The spot selected is on the South Stray, at a point between the Oatlands Drive and the road across the Stray to Wedderburn House. This is about half a mile square, and an uninterrupted run can be had from all four sides. A subscription has been opened by the Mayor to provide a prize for the best flight from Hendon to Harrogate, while a special prize will also be offered to the pilot member of the Yorkshire Club who first completes the flight from London to Harrogate. Subscriptions should be sent to either the Mayor or the Town Clerk at Harrogate.

#### Eastbourne and the European Circuit.

EASTBOURNE having been decided upon as one of the stopping places in connection with the European Circuit, the Local Committee has decided to hold a three days' meeting at Hampden Park, which will form the flying ground. The aviators will arrive on June 27th on their way to London, and will also land at Eastbourne on their way back to Paris on June 29th. It is proposed on these two days and the intervening day to give exhibition flights. An effort is being made to raise £400 locally to be utilised in presenting prizes to the first six aviators to arrive.

#### Testing Propellers at Brooklands.

ON a recent week-end a curious vehicle made its appearance at Brooklands. It consisted of a chassis on which was mounted, as shown in the accompanying photograph, an 80-h.p. 8-cyl. A.B.C. engine, built by the All-British Engine Co., driving a propeller designed by Mr. Lang, who is seen seated alongside the driver, Mr. Charteris. It had made its way up from Southampton in the early hours of the morning, and propeller tests are being made with it at Brooklands to ascertain the dynamic thrust, &c., under working



Mr. Collings Pizey just about to start off from Salisbury Plain for Brighton with the Bristol biplane for Mr. O. C. Morison, as described in our last issue. Mr. Fleming is in the foreground, and on the extreme right M. Vusepey. In the right-hand photograph are Mr. Hotchkiss, sitting at wheel of car, and Mr. Fleming, standing, who followed Mr. Pizey to Brighton by road.

conditions. It is hoped in this way to get some valuable data with regard to propellers. During the journey from Southampton the engine was driven at a speed of about 900 r.p.m., which gave a thrust of about 330 lbs.

## Flying in South Wales.

ON Monday of last week, Mr. E. Sutton made some very good flights over the sands at Oxwich Bay. He several times flew the length of the beach and occasionally rose to a height of about 60 feet. Subsequently he made one or two circular flights, and in one of them the rising wind caused him to be driven sideways on to a sandbank, which caught the tip of one wing and brought the machine down rather heavily.

## Northfall Meadow, Dover, as a Landing Aerodrome.

SOME applications having been addressed to Dover Corporation as to a landing place for aviators coming from London, &c., it has been decided to place at the disposal of aviators the Northfall Meadow where Mr. Blériot landed after his cross-Channel flight.

## Mr. Gilmour at Brighton.

WHILE flying with Mr. Gordon England from Shoreham to Brighton on Sunday last, Mr. Graham Gilmour steered his biplane out to sea. When still at a good height the engine suddenly stopped and the machine commenced to glide down. Fortunately before it touched the water Mr. Gilmour got the engine going again, and rising for a short distance was able to land safely on the Lawn Gardens. Later in the day the two aviators successfully made the return journey to Shoreham.

## Doings at Shoreham.

APART from the visit to Hove by Mr. Gilmour and Mr. England, a good deal of flying was seen at the Shoreham Aerodrome on

Sunday last. Shortly after Mr. Gilmour left for Brighton, Mr. Morison was out on his Bristol biplane and made a circular trip over Shoreham and Lancing College. He then visited Brighton in his motor car, but soon after the return of Mr. Gilmour he was back at the aerodrome giving passenger flights. Mr. Gilmour and Mr. England also took up some passengers, heights attained being well over 1,000 ft.

## The Valkyrie Monoplane in Parliament.

ON Monday in the House of Commons Mr. Burgoyne asked the Under Secretary for War whether, in view of the fact that the Valkyrie monoplane had flown over 8,000 miles, that eleven successful machines of this type had been constructed, that thirty pupils had been instructed without accident on them, and that the inventor, Mr. Barber, offered to dismantle his machine in five minutes and run it across rough country behind a horse on its own wheels, and again assemble it in the same period of time, he would consider the advisability of subjecting the type to military tests before accepting the opinion of his advisers as definite.

In reply Col. Seely said that various patents of aeroplanes are being considered with a view to determining the most suitable for military purposes. If the Valkyrie is thought to comply with such requirements as may be formulated it will be tried.

## "Beta" Bags a Telegraph Pole.

AT the conclusion of some practice flights at Farnborough on the 18th inst., the Army airship "Beta" had a trying experience, although fortunately came through with "flying" colours. The airship was not quite low enough for the soldiers to grab the tow rope, and in consequence it dragged across the ground for some distance. In crossing the Farnborough Road the rope got entangled round a telegraph post, which it succeeded in pulling out of the ground. No other damage was done, however, the airship landing safely shortly after.

## PROGRESS OF FLIGHT ABOUT THE COUNTRY.

NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of FLIGHT, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

### A Model Club for Barrow.

IT is proposed to form a model aero club for Barrow and district, and those interested are asked to communicate with Mr. Jas. Cowen, 29, Baden-Powell Street, Vickerstown, Walney Island, Barrow-in-Furness.

### Birmingham Aero Club (165, HAMPTON STREET).

IN connection with a fête at Handsworth Park on July 17th, this club has consented to receive entries and award the prizes for a model flying competition; members free, non-members 1s. Prizes will be given for longest time in the air. Models to be flown in heats. A prize of one guinea, one of half a guinea, another of 7s. 6d. (conditional); youths under 16, 1st Prize, 7s. 6d., second, 5s. With the exception of the conditional prize the other amounts will be paid irrespective of the number competing.

### Conisborough and District Aeroplane Soc. (18, CHURCH ST.).

AT the annual general meeting held on May 3rd, the following officials were elected for the year 1911-12: President, Mr. J. Brocklesby, J.P., C.C.; Treasurer, R. B. Barker; Joint Secretaries, F. S. Wallis and R. Troughton; Assistant Secretary, J. J. Webster; Committee, J. M. Walton (Chairman); C. C. Allport, J. E. Greadhead.

It was decided to change the name of the club to the Conisborough and District Aeroplane Society.

The record flight for the club of 405 ft., made by T. S. Wallis, won the April monthly prize. Mr. Allport made a flight of 387 ft. on 20th inst., which counts for the May competition.

The Sheffield Aero Club have presented to the club their 42-ft. glider, which requires a little building up, and it is hoped to have it flying by Whitsuntide. The club is in a very flourishing condition now, having a membership of about 40.

### Coventry Aeroplane Building Society (22, KINGSTON ROAD).

MR. P. E. HALL will give a lecture on "Model Aeroplanes" on Wednesday evening, May 31st, in the Mayor's Parlour, Coffee Tavern, Broadgate, Coventry. All are cordially invited to attend, and there will be a discussion.

### Kite and Model Aeroplane Assoc. (27, VICTORY RD., WIMBLEDON)

THE first competitions of the year took place on Saturday, 20th inst., on Wimbledon Common. The first was for the President's

Challenge Shield for the best kite of the year. Sixteen entries were received, and fourteen of these took up their positions on the field at 3 o'clock. It proved a very keen contest, and the holder, A. W. Brown, of Croydon, again secured the shield, the results being—A. W. Brown, 1st, with 91 points, winning the gold medal of the Association and holding the shield for another year; W. Jones, of Gamage's, 2nd, with 86 marks, and winning the silver medal; W. B. Brooke, 3rd, with 85 points, and taking the bronze medal. The junior contest followed, and the winners were:—First, G. Watson, Gamage's, 87 points, winning 20s. and silver medal; second, G. Bance, Croydon, 83 points, bronze medal and 12s. 6d.; third, F. Slatter, Holborn, 79 points, bronze medal and 7s. 6d.

The judges were Major B. Baden-Powell, F.R.A.S. (President), and Mr. H. E. Hughes. The angles were taken by C. Brogden and the hon. secretary, W. H. Akehurst.

Entries for the model competitions at the Crystal Palace on June 7th close on May 29th, and the earlier the entries now reach the secretary the better. He will issue special tickets, &c., in order as received.

On Friday, May 19th, this Association held a meeting at the Northampton Institute, Clerkenwell, when Mr. S. F. Cody delivered a lecture, entitled "How I Learnt to Fly," illustrated by lantern-slides and animated pictures. It was the largest meeting yet held by this Association, over 750 people being present.

### Sheffield Model Aero Club (35, PENRHYN ROAD).

A GENERAL meeting of the club was held at Staniland's Restaurant on May 17th to arrange for the flying competition which is to take place on Whit-Monday. The following events and prizes were decided upon. Members only: Longest flight—winner, 3s. 6d.; Longest time in the air—winner, 2s. 6d.; Best speed up to 50 yards—winner, 2s. 6d. For the open event a silver medal, value 10s. 6d. will be given to the winner of the longest flight. Entrance fee for the open event, 1s. for competitors not members of the club. Three tries will be allowed in each event. Entries close Monday, May 29th. All models must be made by competitors, and no bought models will be eligible to compete. Members of the club wishing to take part in the competition must deposit with the secretary 1s. as entrance fee, and should his model make a flight the entrance fee will be refunded. The flying ground will be published in next week's FLIGHT.



# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 23rd inst., when there were present:—Mr. Roger W. Wallace, K.C., in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Col. H. C. L. Holden, R.A., F.R.S., Prof. A. K. Huntington, Mr. Mervyn O'Gorman, Mr. C. F. Pollock, and H. E. Perrin, Secretary.

**New Members.**—The following new members were elected:—A. G. Cuthbert-Gundry, J. D. Davar, E. Owers, E. Manners Ridge, and Major T. Thornycroft, Vernon.

**"Daily Mail" Second £10,000 Prize.**—The following letter from the War Office, addressed to the Editor of the *Daily Mail*, was considered:—

"May 16th, 1911.

"Dear Sir,—In view of the keen interest taken by all ranks of the Army in the progress of aviation, would it be possible to arrange that the flight in July should include Salisbury Plain, where a considerable number of troops will be assembled?"

"Yours truly,  
(Signed) "E. W. D. WARD."

It was unanimously resolved to accede to the request of the War Office, and include Salisbury Plain in the route for the contest.

## Paris-Madrid Race.

In response to a telegram of sympathy and condolence sent by the Royal Aero Club to the Aero Club de France, in connection with the sad accidents at Issy on Sunday last, a letter has been received thanking the Club for the sympathy extended and stating that the injured persons are progressing favourably.

## Naval Officers at Eastchurch.

The following letter has been received from the Admiralty:—

"Sir,—I am commanded by my Lords Commissioners of the Admiralty to acknowledge the receipt of your letter of the 13th inst. reporting the results of the instruction of Naval Officers in aviation, and I am to request that you will inform the Committee of the Royal Aero Club that their Lordships are much gratified at the successful result of the arrangement made by them whereby four Naval Officers have succeeded in obtaining aviators' certificates in such a short space of time.

"I am also to state that my Lords concur in the remarks of the Committee that the result reflects great credit on the labour and zeal of Mr. G. B. Cockburn, and they would be glad if their thanks could be conveyed to this gentleman.

"I am, Sir,

"Your obedient servant,

"May 20th, 1911." (Signed) "W. GRAHAME GREENE."

## Flights Over Racecourses.

The following letter has been received from the Jockey Club:—

"Dear Sir,—I am in receipt of your letter of yesterday's date, enclosing a copy of a notice issued to all aviators, and beg you will thank your Committee for their very prompt response to Lord Lonsdale's request.

"Yours faithfully,

(Signed) "E. M. WEATHERBY, Secretary.  
"May 18th, 1911."

## Legislative Committee.

A meeting of the Legislative Committee of the three aeronautical bodies was held at the Royal Aero Club on Tuesday, the 23rd inst., at 12.30 p.m., when the following delegates were present:—

**Royal Aero Club.**—C. Grahame-White and R. W. Wallace, K.C. **Aeronautical Society.**—Griffith Brewer, J. W. Dunne, and Lord Montagu of Beaulieu.

**Aerial League.**—H. B. Hemmons, J. S. Judd, and S. A. Marples. Mr. Arthur Du Cros, M.P., Secretary of the Parliamentary Aerial Defence Committee, gave a summary of the proposals which were to be submitted that afternoon by the Parliamentary Aerial Defence Committee to the War Office and the Admiralty. The proposals were unanimously approved by the Legislative Committee.

A resolution was unanimously passed requesting the Parliamentary Aerial Defence Committee to consider the advisability of enlarging their scope, so as to embrace all legislative questions dealing with aeronautics.

## "Daily Mail" Second £10,000 Prize.

Intending competitors are reminded that the entries for this contest close at 12 noon on June 1st, 1911. The entrance fee is £100, payable in one sum or as follows:—

£25 by 12 noon on June 1st; £75 by 12 noon on July 1st.

Late entries will be received up to 12 noon, July 1st, 1911, in which case the entry fee will be £200.

Copies of the rules and entry form can be obtained from the Secretary, Royal Aero Club, 166, Piccadilly, London, W.

Mr. Ernest C. Bucknall, Mr. Norman Clark Neill and the Secretary made a tour of the route for the *Daily Mail* contest last week.

**Harrogate.**—The officials were received at Harrogate by the Mayor (Capt. Boyd Carpenter), the Town Clerk (Mr. E. H. Taylor), Mr. Stuart A. Hirst, Chairman of the Yorkshire Aero Club, and Mr. Herbert E. Harwood, Secretary of the Yorkshire Aero Club. The Stray at Harrogate was selected as the alighting place. The Mayor of Harrogate will endeavour to arrange for a special prize, to be awarded to the aviator who accomplishes the distance from London to Harrogate in the shortest time. A local committee will be formed, consisting of the Mayor and Town Clerk of Harrogate, two or three local citizens, and members of the Yorkshire Aero Club, to take in hand the necessary arrangements.

**Newcastle.**—Mr. Fairbairn-Crawford, Secretary of the Northumberland and Durham Aero Club, and Mr. A. E. George accompanied the officials in inspecting the sites at Newcastle. It was eventually decided, subject to the necessary consent being obtained, to make the alighting place in Gosforth Park.

**Edinburgh.**—Mr. J. Allison, Jr., Secretary of the Scottish Aeronautical Society, and Major C. de W. Crookshank, R.E., met the officials at Edinburgh, and, after a very prolonged search, a suitable alighting place was found at Colinton, about 4 miles S.W. of Edinburgh. The selection of this ground will do away with any necessity for aviators flying over the town of Edinburgh, and there are several prominent landmarks to assist the competitors.

**Stirling.**—Mr. R. J. Smith, Secretary of the Scottish Automobile Club, and Mr. J. Allison, Jr., Secretary of the Scottish Aeronautical Society, met the officials at Stirling, and it was decided that King's Park would make a very suitable alighting place. Here the competitors will be greatly assisted by the prominence of Stirling Castle as a landmark. The situation of King's Park will also enable competitors to make a good start through the valleys leading up to Glasgow.

**Glasgow.**—Owing to the surroundings of Glasgow being densely populated, it was decided to select the racecourse at Paisley as an alighting place. Paisley is some 4 or 5 miles west of Glasgow, and, by its choice, all necessity disappears for flying over thickly-inhabited parts in and round Glasgow. Before leaving Glasgow the officials had a meeting with several members of the Scottish Aeronautical Society, including Professor Barr, Mr. R. J. Smith, Colonel John A. Sillars, Mr. R. R. Speirs and Mr. J. Allison, Jr. The various details in connection with the Scottish portion of the route were fully discussed, and it was left with the Scottish Aeronautical Society to complete the necessary arrangements for the three alighting places.

**Carlisle.**—Sir Benjamin Scott (Mayor of Carlisle), Mr. A. H. Collingwood (Town Clerk), and several members of the Carlisle Corporation met the officials and accompanied them to various sites in Carlisle. The old Racecourse on the bank of the River Eden was eventually selected, and the Mayor kindly promised that the necessary policing and control of the crowd would be undertaken by the Corporation.

In all the towns visited by the officials, great interest was manifested in the forthcoming contest, and the officials of the Club were given every possible assistance.

## Balloon Race at Hurlingham.

A Point-to-Point Balloon Race will take place at Hurlingham to-day, Saturday, at 3.30 p.m. Members of the Club will be admitted free on presentation of their membership cards.

The following is a list of the competitors in the order of starting:—

Competitor.	Balloon.
1. Capt. Hon. Claud Brabazon ... ..	"Mercury."
2. Capt. E. M. Maitland ... ..	"Pompador."
3. A. P. Hohler ... ..	"Uranus."
4. John Dunville ... ..	"Banshee II."
5. Consul Stollwerck ... ..	"Hannover."
6. Hon. Mrs. Assheton Harbord ... ..	"North Star."
7. Capt. E. F. F. Sartorius ... ..	"Corona."

## Gordon-Bennett Aviation Cup.

The race for the Gordon-Bennett International Aviation Cup will take place at Eastchurch, Isle of Sheppey, on Saturday, July 1st, 1911.

Members of the Royal Aero Club will be admitted free to the special enclosure on production of their membership cards. Special catering arrangements have been made, and large marquees for luncheons and teas will be erected in the enclosures. As a great many members will be motoring down, a portion of the enclosures will be devoted to the garage of the cars, and a route map can be obtained on application at the Club.

The Eastchurch Flying Ground is so situated that a good view of the whole course can be obtained from the special enclosures. Standford Hill, which overlooks the whole flying ground, has been kindly placed at the disposal of the Club by Lieut.-Col. Sir George

Holford. The hill will accommodate several thousand people, and constitutes a fine natural stand, from which every incident of the race can be followed. This hill will be opened to the general public at a moderate charge, and refreshment marquees will be provided.

Full details of the whole arrangements at Eastchurch will be issued to the members in the course of a few days.

## Appointment of Timekeepers.

The following Official Timekeepers have been re-elected for the year 1911:—F. T. Bidlake, J. H. Burley, T. D. Dutton, A. V. Ebbelwhite, A. Fattorini, C. P. Glazebrook, J. B. Hyland, James M. Inglis, A. G. Rennie, A. G. Reynolds, J. E. Rhodes, and Z. Wheatley.

## The Manville £500 Prize.

On Saturday last, the 20th inst., at Brooklands, C. Howard Pixton, on a Roe biplane, made a flight of 40 minutes. This flight, with the time allowance, counts as 49 minutes in the above competition. The weight of passenger and pilot was 25 stone 5 lb. The total duration of the two flights made by C. Howard Pixton is now 80 minutes.

HAROLD E. PERRIN,  
Secretary.

166, Piccadilly.

## ISSY-LES-MOULINEAUX.

May 21st, 1911.

France, your history has shown us all through the distant ages,  
How your sons can conquer in courage and high emprise;  
And not the least of their deeds written upon those pages,  
Stands the hour when we hailed you—Queen of the virgin skies.

France, when the world thought flight only man's idle dreaming,  
You without pause or falter challenged the Great Unknown,  
Dauntless in spite of failure, testing, proving, and scheming,  
So that the present reaps the harvest the past has sown.

France, you have nobly heard the call of a High Endeavour,  
Paying to Death the toll of many an honoured name,

## "Parseval II" Wrecked.

WHILE landing at Bitterfeld on Wednesday of last week, the German military dirigible, "Parseval II," was wrecked through being blown against the side of its garage. The force of the collision caused a great hole to be torn in the envelope, and the gas escaping rapidly caused the airship to settle with such force that two of the officers were injured, and the car of the airship was

And all the wondering world holds you now and or ever  
Worthy of all your triumph, worthy of all your fame.

France, we paid you our homage, there on the cliffs of Dover,  
When the distance was spanned that separates shore from shore:  
Every triumph you showed us, hailed we the wide world over,  
Prouder to be your friend than ever we were before.

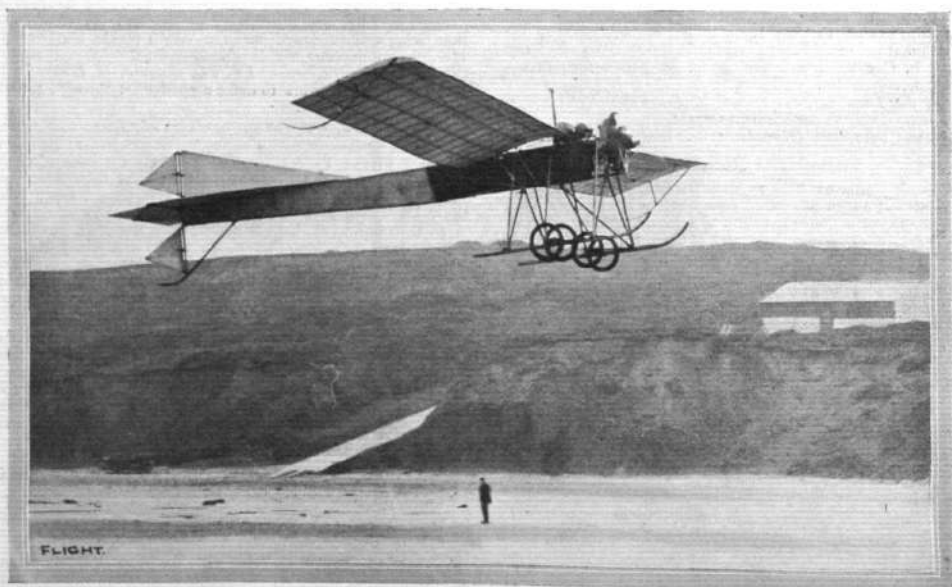
France, in your hour of mourning, England extends her pity,  
Sorrrows for your disaster, bowing for you her head;  
From the heart of her people, village and town and city,  
Take the wreath of their tears as worthy to crown your dead.

DOROTHY M. HAWARD.

damaged to such an extent that it will have to be entirely reconstructed.

## The European Circuit.

Two further entries have been received for the European Circuit, making the total number of entries to date twenty-six. The two latest entrants are K.E.P. monoplanes, to be piloted by Amerigo and Mamet respectively.



Mr. Hucks flying the Blackburn monoplane over the marked course on Filey Sands last week for his certificate.—  
In the background is seen the aeroplane shed on the cliffs and the road from the beach.

## FROM THE BRITISH FLYING GROUNDS.

### Royal Aero Club Flying Ground, Eastchurch.

THE aviators at Eastchurch received a pleasant surprise on Monday morning, when Mr. Alec Ogilvie was sighted over the grounds on his N.E.C.-engine Wright biplane. It appears he had started from Camber at 9 a.m., flying straight for Eastchurch, with the wind—what little there was of it—in his favour. When nearing Ashford (Kent) he thought his engine was not pulling quite so well as usual, and suspecting oil trouble, he decided to descend and make an examination, so as to be quite sure that everything was well. Accordingly, he came down in a field near Ashford, affording most of the country folk their first view of an aeroplane in flight. The fault was of a trivial nature, due to an alteration in the position of the oil-tank, and did not take long to correct; still, half an hour had passed before he was again in the air. Rising quickly he again headed for Eastchurch, which he reached without further incident, appearing over the grounds at 10.30 a.m. When sighted at Eastchurch he was apparently at an altitude of 1,000 ft. From this elevation he descended in three spirals, and finally alighted close to his aeroplane shed. Mr. Ogilvie will be a welcome addition to the skilful band of aviators now at Eastchurch. He shows a perfect mastery over the Wright machine, with which, indeed, he has had considerable experience. Mr. Ogilvie carried with him a recording barograph which registered a maximum height of 1,500 ft. His independent speed throughout the journey was about 40 miles per hour.

What is also particularly interesting is the behaviour of the all-British N.E.C. engine. During the past three weeks Mr. Ogilvie has been in the air not less than 60 hours, and during the whole of that time he has not attempted to overhaul the engine, thus fully bearing out the claim of the makers that with the N.E.C. engine you can fly for long periods of 10 or 12 hours day by day and never require to trouble about the engine—she just runs practically without attention.

On Thursday, Naval Lieuts. Samson, Longmore, Gerrard, and Gregory were all out practising on the Short biplane, particular attention being paid to alighting at a given spot, and also to *vol plané* descents, many of which were made at good angles.

For the rest of the week the weather was not at all suitable for flying, and the Naval officers put in a good deal of time at Messrs. Short Bros.' works, where some instructive work was carried out in trying the strengths of various materials on the test machines.

On Sunday Professor Huntington was out on his machine, as also was Mr. Jezzi on the Jezzi biplane, but the weather was very unsettled and threatening, and after about half-an-hour's practice both machines were taken in.

### Brooklands Aerodrome.

**Avro School.**—Last week Pixton's win on the Avro in the Brooklands endurance competition on Wednesday was omitted in these notes.

On Tuesday morning S. V. Sippe and Mr. Hunter were out on the Avro making short flights. In the afternoon Mr. C. H. Wigg, who is crippled through a cycle accident, was taken up as a passenger, in spite of advice from his gardener "not to go up in them there things." He said he would like to stay up all day. On Thursday a new machine arrived from Messrs. A. V. Roe and Co.'s Manchester works, constructed to the order of Mr. Wakefield. It is of the Curtistype, and designed to start from water as well as on land, and is fitted with a 50-h.p. Gnome. The first trials, which will not be made with the floats, only with the wheels, should take place in about ten days. The first tests on water are to be made in the north of England.

Pixton went for the Manville competition again on Saturday. In the morning the wind was over 30 m.p.h. About 2 o'clock it was only over 20 m.p.h. now and again, and so Pixton went off with Lieut. Parke as passenger. After about 5 minutes a water connection gave out, which caused considerable delay, a start not being made again until 20 minutes to 5, when the wind was still blowing in sharp gusts. However, Pixton kept up for over 40 minutes, with Lieut. Parke as passenger, hardly moving against the wind, whilst with the wind he travelled at a good pace. Pixton landed a few minutes before 5.30, at which time the competition closes.

Conway Jenkins then took up a passenger for a flight. The Avro was the only machine to fly at Brooklands on Saturday.

Lieuts. Watkins and Parke, also Raynham and Pixton, were carrying passengers on the Avro-Farman on Sunday afternoon.

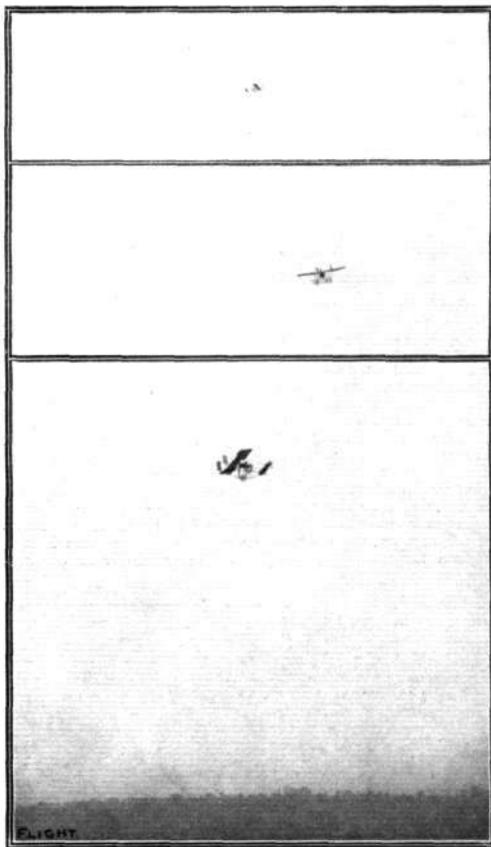
**Hanriot School.**—Sunday last saw the Hanriot monoplane out again for the first time since its recent smash. Mr. Fisher took it out for a short spin to see if everything was properly adjusted, rising very quickly, the 50-h.p. Clerget engine pulling magnificently.

Work commenced early next morning, three pupils putting in some useful practice. Mr. Bell, who had been out once previously, and Mr. Jack Humphreys, who had two lessons to his credit, were both making straight flights, while Lieut. Manisty received his first lesson in rolling. In the evening Mr. Fisher flew for 25 minutes in a puffy wind to see how the engine was running, rising about 400 ft., the machine showing great steadiness. Later Mr. Bell made a few straight flights, but found the wind troublesome.

On Tuesday morning the machine was again out, under the control of various pupils, till the wind got up, compelling operations to be suspended for the day.

**Hewlett and Blondeau School.**—Mr. Snowden-Smith flew to Surbiton twice during last week on his Blondeau-built Farman, and during the last fortnight the Hewlett and Blondeau School has been very busy doing more or less continuous passenger flights. During this period three more pupils have joined the school. Every morning and evening that is possible for teaching purposes one or other of their machines is out.

On Sunday last Mr. Snowden-Smith flew over to Lady Northcliffe's garden party. He started with Mrs. Hewlett as passenger on his all-British Farman, built by Mr. Blondeau; he carried oil and petrol for nearly 200 miles, but found he did not rise as quickly as he liked with this weight. Flying at about 400 ft., when four miles in the direction of Guildford he decided to return to the track, and then re-started alone. He landed exactly on the sheet spread



The Valkyrie Military Monoplane, high-flying and in gliding flight at Hendon. In the top photograph she is at a height of 2,000 ft., in the middle picture she is descending, and below, the pilot is completing a spiral *vol plané*.

to direct the aviators, and left from the same place. On the return journey he rose to 3,000 ft. and did one of his very fine *vol plans* with engine stopped. Afterwards he took up the pupils and some passengers for trips round the aerodrome. Lieut. Cecil Marks made some extremely good flights on the Farman, and he also took up passengers.

## Filey School (Blackburn Aeroplane Co.)

ON Thursday last week, Mr. Hucks, after completing his flight to Scarborough, spent over two hours in the air, repeating over and over again the necessary tests required for the Royal Aero Club's certificate. In one of his flights he executed a pretty *vol plané* from a height of 1,300 ft., and landed perfectly without the slightest jar.

On this day arrangements had been made with the Aero Club officials to witness the official flights for the pilot's certificate. He accomplished the distance flights with the greatest ease, as he had repeatedly done the required tests day by day previously.

He rose at 12.22½ p.m. and completed the first figure of eight at 12.24, the second at 12.25½, the third at 12.27, the fourth at 12.28½, the fifth and last to count at 12.29½, the sixth being finished at 12.30½. He did one or two extra turns, but the official figures given show how he decreased his time each round. During this time the machine, which answered perfectly to his every demand, attained a height of over 300 ft., from which he came gracefully down to the exact starting point.

It was then thought that Mr. Hucks had completed everything for his certificate, when a doubt arose as to whether two distinct flights were necessary, and therefore to make assurance doubly sure on this point, Mr. Hucks decided to go up again. He set off and completed the first circuit, and was in the act of turning in the second circuit when the propeller flew clean off the engine and continued spinning round till it touched the ground. Had the machine been making a straight course there is no doubt but that Mr. Hucks would have been able to plane down with safety, but owing to the severe angle he was turning at the moment, the machine came to the ground and was badly damaged. Fortunately, Mr. Hucks escaped without any severe injury. The cause of this accident was due to the breaking of the sleeve of the propeller, which was due to it seizing and getting overheated. It is expected that Mr. Hucks will soon be ready to fly again.

Throughout the week Mr. Weiss has been practising by making trial straight runs to enable him to steer the machine in a straight course. He has now practically mastered this, and will shortly make attempts at short flights.

## Freshfield Aerodrome, near Liverpool.

SEVERAL good cross-country flights have been made by Mr. R. A. King on his Farman biplane. On the 16th inst., accompanied by his pupil Mr. Topham, he flew from Freshfield to Blackpool and back. After circling the Tower at the latter place the aeroplane landed near the Imperial Hydro, and after a rest of a little over an hour the return journey was made. Going against the wind the trip to Blackpool occupied just on three-quarters of an hour, but coming back, when the breeze had practically died away, the trip only occupied about half an hour. Southport was passed *en route* at a height of about 1,200 ft. On the 17th inst., Mr. King set out in the afternoon to fly to New Brighton and Liverpool. Again accompanied by Mr. Topham, he left Freshfield at a quarter past five, and after rounding the Tower at New Brighton the wind became so treacherous that it was decided to land. As conditions did not improve, the machine was anchored on the sand at New Brighton for the night, and just before eight o'clock the next

morning the two aviators made a couple of flights in the neighbourhood of New Brighton and then flew over to Waterloo, where they had breakfast with Mr. and Mrs. Melly. Afterwards Mr. King, in company with Mr. Melly, flew back to Freshfield.

## Liverpool Aviation School, Sandheys Avenue, Waterloo.

MR. A. DUKINFIELD-JONES has been out every day before breakfast for an hour, and is making very good progress in straight line flying and landing. He is rapidly becoming proficient in balancing and steering, and he is expected very soon to be making circular flights. On the 19th he made two exceptionally good flights of from 400 to 500 yards, each in a 15-mile wind of a particularly puffy nature. On the 18th the principal, Mr. Melly, had the two-seater Blériot out again and carried his pupil to Freshfield Aerodrome, a distance of 9 miles. A long visit was paid to Mr. King, who arrived from Waterloo shortly afterwards. Owing to rising wind the machine was housed at Freshfield, and Mr. Melly flew it back again with Mr. Jones as passenger on Sunday morning. On arrival at Waterloo, a circular flight was made, carrying Mr. Fenwick, of Planes, Ltd., as passenger, the flight finishing with a fine *vol plane*.

## London Aerodrome, Collindale Avenue, Hendon.

Blériot School.—Tuesday last week opened brightly, and work started at 6 o'clock. Messrs. Seaman and Abercromby were making some very nice straight flights, showing a marked improvement on their previous attempts. Unfortunately, at 8 a.m. the wind got up, and nothing further could be done that day.

Wednesday only allowed early morning flying, nevertheless Messrs. Seaman, Abercromby, Clayton, and Gordon-Jones were able to put in some useful work before the wind became too high. Thursday was another short day owing to the wind, and Messrs. Seaman and Nathan were only just able to get across the ground two or three times. Friday and Saturday were blank days, owing to a gale.

Monday last saw a good deal of work in progress. Mr. Abercromby distinguished himself by flying a complete circle, Messrs. Seaman and Dyott made some straight flights, while Messrs. Nathan and Maunde Thompson, a new pupil, indulged in some rolling practice. Mr. G. Hamel had the Blériot passenger machine out several times during the week, and took up Mr. Abercromby and Mr. Robert Lorraine for short flights.

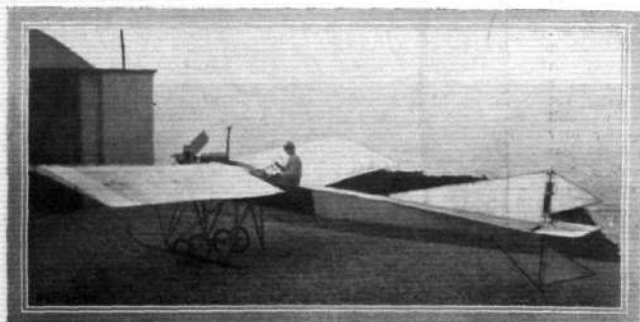
Grahame-White School.—Early on Wednesday morning, May 17th, Mrs. J. V. Martin had the School Farman brought out, and made several very good flights at a considerable altitude. The school has every reason to be proud of its lady pupil, as, so far as can be ascertained, she is the first Englishwoman to reach such a stage of proficiency. Before descending from the machine she had put to her credit quite a long flight—twelve circuits of the aerodrome. After lunch, Mr. Grahame-White mounted a Farman machine, and flew for a quarter of an hour over the neighbourhood in the direction of the Edgware Road. This trip was by way of testing the machine preparatory to Martin's flight to Brooklands. Soon after Grahame-White's descent, Martin, with Mr. L. H. Gamsa as passenger, rose in the air, and after two circuits to attain sufficient altitude, struck out in the direction of Weybridge. A 'phone message reached the aerodrome about three-quarters of an hour after his departure stating that he had landed safely, and was preparing to return with another gentleman as passenger. This flight from Brooklands to Hendon with a passenger was arranged through a well-known firm of booking agents, and is probably the first cross-country passenger-flight of its kind on record. On his return to the aerodrome, Lieut. Davies flew the same machine for quite 20 mins., during the course of which flight he made two right-hand turns.

Next morning early he was out practising, and later, although the wind had freshened considerably, he successfully carried out the three tests for his pilot's credentials, his certificate being the third that has been obtained at the school during the last five days.

When he came to earth, tuition operations were immediately resumed, Greswell taking up the pupils in succession as passengers.

Nothing of note occurred on Friday until the evening, as the wind was too troublesome for pupils. At about 6 o'clock Greswell rose on his Gnome-Blériot, and made a very interesting flight at a mean altitude of 1,000 ft., gliding to earth at the end of a 15 minute jaunt. No flying occurred on Saturday, the wind being prohibitive.

On Sunday morning Mr. Grahame-White was at the aerodrome soon after breakfast, preparing his Farman for a flight to Lord Northcliffe's residence,



Mr. Hucks on the Blackburn monoplane at Filey Cliffs.



Sutton Place, near Guildford. With his chief engineer Carr as passenger he rose at about 10.30 to some considerable altitude, and set off along the now well-worn aeroplane course from Hendon to Brooklands. As he neared the Weybridge track he decided to make a halt there before proceeding. Resuming his journey after half-an-hour's wait, he arrived at his destination without incident.

On taking his departure from Sutton Place some time later, his propeller had the misfortune to encounter a large hump in the ground with disastrous results to the former. On this account his return was postponed till the following day. Meanwhile, back at Hendon, Hubert had been doing some good flying on the military Farman.

Early next morning Mr. Grahame-White started out on his return to Hendon, but a "miss" in the motor brought him down near Woking.

Mechanics arrived later on in the day, and having remedied the defect, Hubert flew the machine to Brooklands, in spite of the strong breeze, where it was housed for the night. At the school, Raglus was practising on the school E.N.V.-Blériot.

After several good straight flights he suffered a very unfortunate "chute," which will probably put that machine out of commission for some time. The pilot, we are glad to relate, was very little hurt.

**Valkyrie School.**—"Valkyrie II," the big passenger-carrier, was very busy indeed carrying numerous passengers at heights ranging from 50 to 400 ft. on Wednesday last week. Among those carried were Miss Meeze, Major Wells, Mr. Halse, and W. H. Barnes. "Valkyrie VI," the new type B military monoplane, was also out in a considerable wind, and made numerous circuits of the aerodrome in fine style.

Next day the passenger-carrier was again busy, commencing its flights at 5 a.m., and carrying a host of passengers. The wind rising about breakfast time, further flying had to be discontinued for the rest of the day.

On Monday last a very fine flight up to 2,000 ft. high was made in the military type, ending with a long spiral *vol plané*. The school machine was also very busy the whole of the day.

#### Salisbury Plain.

ON Tuesday evening of last week the weather was good for flying, and at the Bristol School two machines were out with which Messrs. Pizey, Jullerot, Fleming, and Vusepuy were kept busy with pupils. No flying was possible on Wednesday until the evening, and the time was spent in erecting machines in the sheds. Owing to the number of machines wanted by the military who are at Salisbury Plain, the Bristol staff has been considerably increased. Captain Burke was up for a little while in the evening and flying well. The pupils at the Bristol School are not afraid of early rising, and on Thursday morning they were at work by 3 a.m., M. Jullerot taking a trip on a military machine for 40 minutes. The racing biplane was brought out and was used for some very satisfactory rolling while in the afternoon a new machine was put through its paces before being handed over to the Air Corps. It answered the tests well and now forms part of the British Army equipment. Capt. Burke and Capt. Fulton were flying, as well as the instructors at the Bristol school, who were giving lessons to pupils. On Friday the racing biplane met with a slight accident, but otherwise the school took every advantage of the fine flying weather. The military aviators were also hard at work making some good flights with a new military extension Bristol biplane. Saturday was devoted to



Mrs. J. V. Martin, who is flying so well at the Grahame-White School at Hendon.

erecting new machines for the Air Corps, several members of which were out flying on Sunday evening, when Mr. Cockburn carried several officers as passengers. Lieut. Barrington-Kennett was in the air for thirty minutes making a good flight with one of the new Bristol machines. Mr. Cockburn then took up Lieut. Reynolds for a short flight, but by this time the wind had become very puffy, and operations were suspended for the day. Capt. Burke and Mr. Cockburn were also flying on Monday, and Mr. Pizey piloted one of the new Bristol machines for a long flight, rising to a height of 1,000 ft., and coming down with a very fine glide. Afterwards Mr. Pizey took up several pupils, including Lieut. Montefiore, Mr. Brerton and Mr. de Grey Warton. Although the weather was gusty on Tuesday morning, Mr. Pizey was giving lessons on the military extension machine, and Lieut. Barrington-Kennett and Capt. Burke were trying their machines until the wind increased so much as to put an end to flying for a time. Mr. Hotchkiss made a good flight on the new military extension biplane. Mr. Fleming has gone to Brooklands to take Mr. Gilmour's place as instructor.



Part of the Valkyrie fleet of military aeroplanes on view at Hendon during the recent Parliamentary demonstration.

# FOREIGN AVIATION NEWS.

## Paris-Turin Race.

Two further entries were received for this event, which starts to-morrow, Sunday, making the total number nineteen, in addition to which nine French officers have been designated to take part. The two new entries are those of Vidart on a Deperdussin and Luzetti on a Morane. The officers who are to take part are Lieuts. Chevreau (Blériot), Lucca (M. Farman), d'Aiguillon (Goupy), Cheutin (M. Farman), Delage (Nieuport), Mailfert (Sommer), P. Fequant (Nieuport), Maillols (Nieuport), and Clavenad (Blériot). The start will be from Buc instead of from Issy as was originally arranged.

## The Fatal Accident to "Pierre Marie."

YET another unnecessary sacrifice of life, owing to the imprudence of the aviator, was the accident which occurred at the Betheny Aerodrome, near Rheims, on Thursday morning of last week. It is much to be regretted, too, that not only was the aviator himself killed, but the passenger, Lieut. Dupuis, met a terrible death through being burnt amongst the wreckage. There was a very strong wind blowing, and M. Pierre Marie Bournique was strongly advised not to attempt any flights, but he insisted on testing his 100-h.p. Deperdussin monoplane, which he had entered for the Paris-Turin race. He rose to a height of about 60 metres and was just completing one round of the ground when a gust of wind caught the machine and capsized it. It fell to the ground like a stone, and before the horrified spectators could reach the wreck it had burst into flames. "Pierre Marie" was still alive and was taken to the hospital, where, however, he succumbed to his injuries in the afternoon. His passenger, unfortunately, was burnt to death before he could be extricated from the wreckage. M. Bournique, who was better known by his flying name of "Pierre Marie," was 23 years of age and was an Alsatian by birth. It was on an R.E.P. machine that he scored his first successes as an aviator, and it will be remembered that last December in an attempt on the Michelin Cup he beat the records for 250 and 500 kiloms. as well as that for six hours.

## French G.B. Eliminating Trials.

IT would appear that Douai is to have the honour of seeing the eliminating trials of the Gordon-Bennett race, the Municipal Council having decided to accept the terms offered by the Aero Club of France, and to vote the money necessary for the organisation of the event.

## The Sommer School at Mourmelon.

M. SOMMER has decided to recommence his school at Mourmelon, and on the 16th inst. Molla and Bathiat delivered three machines at Mourmelon by way of the air, flying from Douzy by Sedan, Mézières, Rethel and Rheims. They have since made several lengthy flights at Mourmelon both on monoplanes and biplanes.

## A Russian Grand Duke at Mourmelon.

ON the 17th inst. the Grand Duke Alexander of Russia visited the flying ground at Mourmelon, and inspected the various schools there, including those of Farman, Sommer, Nieuport, and Antoinette. The Grand Duke was accompanied by General Roques and Col. Hirschauer, and witnessed several flights by pupils.

## A Chili Mission at Douai.

ON the 19th inst. M. Breguet was visited at his La Brayelle aerodrome by Gen. A. Pinto Concha and Col. Altamirano, who are visiting Europe with a view to buying aeroplanes for the Chilean Army. The General was taken for a flight by M. Breguet, and expressed his pleasure at the experience.

## Two More Fatal Accidents.

WHILE making some exhibition flights at Strasburg on Tuesday, in connection with the Upper Rhine Flying Week, Laemmlin fell from a height of nearly 200 ft., and was killed. On the 17th inst., at Los Angeles, Mr. A. V. Hardlee was killed while testing a new aeroplane.

## A FRENCH WIRE FASTENER.

A CORRESPONDENT sends the original from which the accompanying sketch is drawn, and asks if any firm in England supplies this form



of wire fastener. It consists of a sleeve of steel wire coiled as shown, and was obtained originally at the Paris Salon. We publish the sketch as a suggestion to those who may be interested.

## A Deperdussin with Six-bladed Propeller.

IT will be remembered that at the last Paris Aero Show was exhibited a Deperdussin monoplane fitted with a six-bladed propeller. On the 16th inst. Aubrun was testing this machine at the Betheny flying ground, and after a short flight said he was very well pleased with the results obtained.

## The First Spanish Aviator.

AT Rheims, on the 17th inst., Campana, the well-known Spanish racing cyclist and motorist, successfully passed for his *bravet* on a Hanriot monoplane. It is claimed that he is the first aviator of Spanish nationality to obtain a certificate. During the tests he was flying at a height of 100 metres, and afterwards carried his wife for a trip over the environs of the champagne city.

## An Antoinette in Russia.

USING an old Antoinette monoplane, which was flown for a long time by Latham, the Russian airman Chiroi made a flight of more than an hour's duration over the country around Odessa on April 26th.

## An American Farman Factory.

IT is announced that Mr. Henry Farman has now made arrangements to start works in the United States for the manufacture of his biplanes. The directors of the American Company will be Baron Ladislas d'Orcy and Mr. Alfred W. Lawson, the well-known American balloonist and sportsman.

## Military and Navy Work in Japan.

ON the 4th ult. Capt. Tokugawa, at the military flying ground at Tokorozawa, made several short trials on a Farman biplane, and afterwards Capt. Hino, on a Wright biplane, rose to a height of 500 feet and covered 10 miles in 23 minutes. On the following day he improved on this altitude record by rising to a height of 830 feet, during a flight of 10 kiloms. in 11½ minutes. On a Grade monoplane Naval Lieut. Umekita attempted to make a flight, but as the machine left the ground it came in contact with a stack of wood and was considerably damaged.

## Upper Rhenish Flying Week.

PRINCE HENRY OF PRUSSIA officially opened the proceedings in connection with the flying week on the Upper Rhine on Saturday last when he inspected the competing machines, and during an address to the competitors warned them against circus performances. The actual competition commenced on Sunday morning, when seven of the entrants started off from Oos, near Baden-Baden, to fly to Freiburg. The seven competitors, Jeannin, Hirth, Laemmlin, Brunnhuber, Witterstatter, Thelen and Werngen all succeeded in completing this stage, although the two last mentioned were somewhat late. On arrival at Freiburg a few exhibition flights were made, but the unfavourable weather curtailed this part of the programme, and also delayed the start on the second stage, which was to Mulhausen. All the competitors have to land on the way, and Brunnhuber, who was the first to arrive at Mulhausen, did not get through until eight o'clock the next morning. He was followed by two others, Hirth and Laemmlin, and these three later in the morning continued on their way to Strasburg. Jeannin landed near Neuenburg and damaged his machine so much in landing that he retired from the competition, while Thelen, who lost his way, was disqualified. The destination of the aviators is Frankfurt-on-Main. In connection with the competition, a contest for officers was organised by the Prussian Minister of War, commenced on Thursday last and was continued for three days. Three officers, each accompanied by a fellow officer, were to proceed from Karlsruhe to Mannheim, Mainz, Frankfurt, Darmstadt, Offenbach, and Frankfurt. The machines have been supplied by the military authorities, and prizes are offered to the aviator and his passenger, the latter having to make a report of his observations during the trip.

## NEW DUNLOP FABRIC.

SAMPLES of two new fabrics, intended for use in surfacing aeroplanes, have reached us from the Dunlop Rubber Co., Ltd., Manor Mills, Aston, Birmingham, who send the following data relating thereto:—

No.	Proofing.	Material.	Width. ins.	Price per	Approx. Weight per sq. yd.	Approx. Strength per sq. yd.	Warp.	Weft.
				yard.				
				s. d.	ozs.	lbs.		lbs.
40	Single faced	Cotton	39	1 10	4 25	2,200		2,275
41	Double "	"	39	2 1	4 5	2,200		2,275

# ATMOSPHERIC FRICTION.

By A. F. ZAHM.

(Concluded from page 450.)

MANY other relations between these variables might be pointed out, but it would be foreign to the purpose of this paper. In passing it may be observed that, for a plane of given size, weight, and speed, it is more than eight hundred times easier to glide through water than through air, since the power varies inversely as the density of the medium. An interesting hydroplane has, in fact, been constructed by Professor Williams, of Cornell University, and made to "soar" through the water of Lake Cayuga.

In the foregoing discussions it has been assumed that Duchemin's formula is a true expression for the resistance of a smooth plane. This is not true for all planes at all angles, though at small angles it is doubtless true; for at these the formula makes the normal resistance on the oblique plane proportional to the sine of the angle of flight, which is unquestionably true.

So much for a smooth mathematical plane. Let us now consider the effect of surface friction. If the friction per square foot is  $f'$ , and the angle of flight is small, equation (a) may be written  $R = W \tan \alpha + 2 f' A v^{1/8}$ , the other equations remaining practically the same. Substituting in this the value of  $\tan \alpha$  in (d') we have

$$R = \frac{W^2}{2k A v^{1/8}} + 2 f' A v^{1/8}$$

$$H = \frac{W^2}{2k s A v^{1/8}} + 2 f' A v^{1/8}$$

These equations show that for high speeds both  $R$  and  $H$ , that is, both the mileage cost and propulsive power, increase with the velocity. In the limit the mileage cost varies as  $v^{1/8}$ , while the power varies as  $v^{3/8}$ . By giving concrete, practical values to  $W$ ,  $s$ , and  $A$ , it is easy to show that both the resistance and power of a soaring plane have minimum values at small angle, say between  $1$  and  $10^\circ$ . An example will illustrate this.

Let it be required to find the power necessary to propel a soaring plane  $1$  ft. square weighing  $1$  lb. The soaring angle,  $\alpha$ , is given in terms of the velocity by the equation (c) by making  $k s = 0.004$ ,  $A$  being  $1$  sq. ft.,  $W$   $1$  lb., and  $v$  being miles an hour. The resistance may then be computed from the formula  $R = \tan \alpha + 2 f'$ ,  $f'$  being the coefficient of friction, as given by Table IV. The power and pounds carried per horse-power are obtained by obvious means. The computations for such a plane are given in Table VI.

TABLE VI.—Computed Power and Speed for a Soaring Plane; Area, 1 sq. ft.; Weight, 1 lb.

Soaring Speed. mi. hr.	Soaring Angle. deg.	Computed Resistance.			Tow-line Power. ft. lb. sec.	Tow-line Horse Load. lbs.
		Drift. lb.	Friction. lb.	Total. lb.		
30	8°25'	0.145	0.0170	0.162	7.13	77.1
35	5°94'	0.104	0.0226	0.1266	6.51	84.3
40	4°52'	0.790	0.0289	0.1079	6.32	86.7
45	3°55'	0.0621	0.0360	0.0981	6.39	86.1
50	2°88'	0.0500	0.0439	0.0939	6.89	80.2
60	2°03'	0.0354	0.0614	0.0962	8.50	64.7
70	1°47'	0.0257	0.0814	0.1071	11.00	50.0
80	1°12'	0.0195	0.1045	0.1240	14.56	35.8
90	0°88'	0.0154	0.1300	0.1454	19.17	28.7
100	0°71'	0.0124	0.1584	0.1708	25.00	22.0

The effect of friction is very manifest. Owing to it, the power reaches a minimum at about 40 miles an hour. The mileage cost

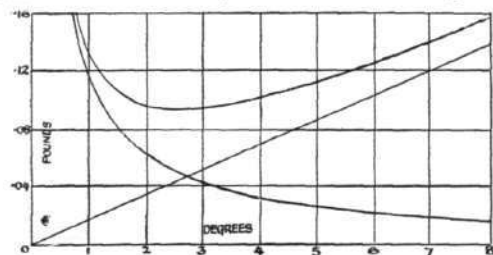


Fig. 9.—Soaring angle and computed resistances for a foot-square plane weighing 1 lb.

attains its least value at about 50 miles an hour and at an angle of less than  $3^\circ$ . This latter relation is more clearly shown in Fig. 9, where the soaring angle and resistance are co-ordinated. The drift

curve is nearly a straight line for the small range of angles plotted, but later turns rapidly upward, becoming infinity and vertical at an angle of  $90^\circ$ . The friction curve begins at infinity, falls rapidly, and becomes zero at a soaring angle of  $90^\circ$ . The total resistance is asymptotic to the others, and has its minimum at about  $2\frac{1}{2}^\circ$ . This angle and the corresponding speed are, therefore, the most economical for a thin foot-square soaring plane weighing 1 lb.

It will be observed in the last column that the maximum weight carried per tow-line horse-power is scarcely 90 lbs. This is very small, but may be increased in several ways: by lightening the load and letting the plane soar at a lower speed; by arching the surface like a vulture's wing; by changing the foot-square plane to a rectangle and towing it long side foremost. The latter device has been tested experimentally by Mr. Langley. His results are presented in Table VII, together with corrections for skin-friction made by the present writer.

TABLE VII.—Data for Soaring of  $30 \times 4.8$  in. Plane; Weight, 500 grammes.

Soaring Angle. deg.	Soaring Speed. ft. sec.	Horizontal Resistance. gmms.	Corrected for Friction. gmms.	Horse Load. lbs.	Corrected for Friction. lbs.
10	40.7	88	95.04	77	71.3
5	49.8	45	55.34	122	99.2
2	65.6	20	37.69	209	110.9

The last column shows, after correction for friction, that the plane in question may carry about 111 lbs. per tow-line horse-power at an angle of  $2^\circ$  if the edge resistance be neglected. This ratio of weight to power is still not very large, but it may be augmented by arching the plane and by lessening the load. This latter device is being pushed to an extraordinary degree by Dr. A. G. Bell, and it will be very interesting to learn the horse-load of his most efficient kites.

So much for soaring planes. But these are of less substantial interest than arched surfaces, which, besides other advantages, carry a larger burden per horse-power. This fact is duly regarded by modern aeronauticians, both investigators and designers. The Wright Brothers, who, after Lilienthal and Chanute, have been especially active and successful in practical flight, claim for their gliding machine a tow-line horse-load as high as 166 lbs. at a speed of 18 miles an hour, and that, too, including the resistance of the entire framing. Mr. Herring has reported similar good results with a flying model. To secure such efficiency with a plane, either square or shaped, as in Table VII, the surface load would have to be much less than 1 lb. per sq. ft. It seems, therefore, most important to the science of flight to determine accurately the lift and drift of arched surfaces for various speeds and angles of advance.

The frictional resistance of arched surfaces can be determined by the method previously employed for wedges. Thus, resolving the friction on any element,  $ds$ , of the surface into components at right angles and parallel to the course and integrating the latter component over the surface, we have  $R = 2 \int_a^b f_s ds \frac{dx}{ds} = 2 \int_a^b f_s dx$ , in which  $f$  is the average unit friction and  $x$  the length of surface fore and aft, the width being unity. Hence the frictional resistance of a plane or arched surface, soaring at small angles on a horizontal course, equals the horizontal projection of the surface multiplied by the average unit friction, as given by Table IV; that is,  $R = 2 f S$ , in which  $f$  is the average friction and  $S$  is the projected surface.

The reader may like a practical application of the above formula. Take, for example, the Wright Brothers' gliding machine of 1902. Its surface measures 5 ft. fore and aft, spreads 320 sq. ft., and meets a total resistance of 30 lbs. when soaring 18 miles an hour. By Table IV the average friction is  $0.00302$  lb. per sq. ft. Hence by the last formula  $R = 2 \times 0.00302 \times 320 = 1.9$  lbs. The friction, therefore, seems to be only about six per cent. of the total resistance.

For spindle-shaped hulls, or surfaces of revolution, the skin resistance is computed in a similar way. Thus resolving the friction on an elementary band of radius  $r$  and of width  $dr$ , into components at right angles and parallel to the axis, and integrating the latter, we have  $R = 2 \pi \int_a^b r f_s ds \frac{dx}{ds} = 2 \pi \int_a^b f_s r dx = \pi f A$ , in which  $f$  is the average unit friction and  $A$  is the area of the longitudinal section of the solid of revolution.

Let us now apply this formula to compute the resistance of the Zeppelin balloon at a speed of, say, 10 ft. a second. The balloon is a cylinder, with ogival ends of 1.5 calibres; the length is 390 ft.; the diameter is 39 ft. Hence the longitudinal section may be taken as roughly equivalent to a rectangle 39 ft. wide by 350 ft. long, the area being 13,650 sq. ft., approximately. Now, the average friction

on a plane surface 350 ft. long, at 10 ft. a second, is 0.000366 of a lb. per sq. ft. Hence, by the formula just established,  $R = \pi f A$ , the skin-friction on the entire convex surface is

$$0.000366 \times 13,650 \times 3.1416 = 15.7 \text{ lbs.}$$

The pure head resistance of prow and stern is about 61.6 lbs., as determined by the writer's unpublished experiments on spindles. Hence the total resistance of the balloon is 77.3 lbs., approximately, and thus the friction is about 20 per cent. of the whole resistance.

The value just computed of the ratio of friction to total resistance seems very small, but that is because the balloon is so blunt-ended. If, however, the cylindrical part be provided with a two-calibre prow and nine-calibre stern, the resistance, figured as in the last

paragraph, would be: Friction, 16.5 lbs.; pure head resistance, 15.6 lbs.; total resistance, 33.1 pounds. Thus the friction is about one-half of the entire resistance.

Analysing in a similar way the resistance of street cars and railway trains, it is seen that for a short, blunt car the skin-friction is of small consequence; for a long train it may equal, or exceed, the head resistance. When cars are run at a very high speed, as on the Marienfelde Zossen Electric Railway, the chief resistance is due to the air, since the road-bed has to be very smooth and well balanced. In such cases economy would seem to require that the cars should, like navigable balloons, be designed in accordance with established aerodynamic principles.

## SCHOOL AERO CLUB NOTES.

By ROBERT P. GRIMMER, General Secretary British Federation of School Aero Clubs.

A BRITISH Federation of School Aero Clubs has at length been formed under the presidency of Mr. Claude Grahame-White, and having as vice-presidents Mr. Howard T. Wright, Mr. A. V. Roe, and Mr. T. W. K. Clarke. The president has addressed a circular letter to the more important schools of this country calling their attention to the national importance of the school aero club movement.

The objects of the Federation are (a) to encourage the general formation of school aero clubs; (b) to promote the sports of kite, model aeroplane, and glider flying among schoolboys; (c) to link together under central organisation the clubs already existing; (d) to organise inter-school contests; (e) to offer prizes for scale drawings, scale models, inventive ideas, essays, and scientific research generally; (f) to assist boys displaying special aptitude to enter the aviation profession; (g) to educate the coming generation to a sense of the immense importance of air-power.

"The education of our coming generation in matters aeronautical is of undoubted importance. Every school ought to have its aero club so as to encourage those boys who have a natural aptitude that way to indulge in what is really an excellent sport—model aeroplane racing. One well trained in his youth in the manipulation of models, kites, and gliders will soon become proficient as an aviator or as a constructor of aeronautical apparatus."—Major Baden-Powell in the *Daily Telegraph*.

I give below a list of all the school aero clubs in Great Britain known to me, the majority of which are included in the Federation:—

Arundel House School Aero Club, Surbiton.  
Dudley House School Aero Club, Lee.  
East London College Aeronautical Society.  
Elmhurst School Aero Club, Kingston-on-Thames.  
Epsom College Aero Club, Epsom.  
Fairfield School Aero Club, Bristol.  
George Watson's College Aero Club, Edinburgh.  
Handel College Aero Club, Southampton.  
Rossall School Aero Club, Fleetwood.  
Roan School Aero Club, Greenwich.  
Simon Langton School Aero Club, Canterbury.

Will the secretaries of any clubs omitted kindly communicate with me at 15, Arlington Road, Surbiton.

Rossall was the first Public School to form an aero club, and the secretary, Mr. John Giles, is to be congratulated on the progress made. Recently a gliding flight of 85 yards was achieved, and two members, Marcos Bowen and William Horrocks, have just accomplished flights of 426 ft. and 219 ft. respectively with models of their own design.

## CORRESPONDENCE.

\*.\* The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which they have read in **FLIGHT**, would much facilitate ready reference by quoting the number of each such letter.

NOTE.—Owing to the great mass of valuable and interesting correspondence which we receive, immediate publication is impossible, but each letter will appear practically in sequence and at the earliest possible moment.

### Classification of Aeroplanes.

[1187] I have read with interest the views of your correspondents re the classification of aeroplanes and have carefully considered the subject. I think, however, that one important omission has occurred—the position of the pilot in relation to that of the engine. To remedy this I have compiled an easily mastered formula based on Mr. Twining's system, which seems very applicable.  $P_i$  represents the pilot, and  $E_g$  the engine. Where either or both of these are stationed above, between, or below, the main planes I suggest placing them in brackets after the latter. Thus we get:—

o - $E_g$ - 1 ( $P_i$ ) - 1...	Blériot.
o - $E_g$ - 2 - $P_i$ - 2...	Goupy biplane.
1 - 2 ( $P_i$ - $E_g$ ) - 2...	Henry Farman.
1 - $P_i$ - 2 ( $E_g$ ) - 1...	Howard Wright biplane.
1 - $P_i$ - $E_g$ - 1 - o...	Valkyrie.
o - $P_i$ - 1 - $E_g$ - o...	Dunne monoplane.

Walthamstow. W. R. DOUGLAS SHAW.

### Why Not Try It?

[1188] Having read in your valuable paper of the "recent War Office developments," may I suggest another, viz., that the price of one "Dreadnought" (say £2,000,000) should be expended instead upon the construction of a fleet of (say) 2,000 aeroplanes for naval defence, carrying 1,000 lbs. weight of dynamite bombs apiece, which could be dropped upon any invading force whether on the sea or land.

I think that we should then be in a position to demonstrate the superiority of the airman's position even to the "man in the street," and convince him that further expenditure upon battleships and

armaments is a futile waste of money, since the same result could be attained so much more cheaply.

East Grinstead. "COMMON SENSE."

### Pendulum Stability.

[1189] With reference to Mr. C. Langley Johnson's letter (1120) advocating direct pendulum operation of ailerons, I hardly think that he has gone very deeply into the matter when he says that "the weight required would be comparatively small."

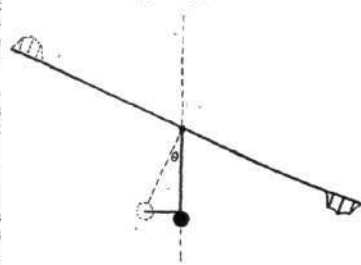
Consider a monoplane with ailerons coming straight towards you and heeling to port (see Fig.). By reason of its inertia the pendulum remains vertical and puts the port aileron down. The force

holding it down, however, is nothing at all. The pendulum being vertical all its weight is taken by its pivot, and there is no resultant force to act on the ailerons.

The air pressure now tries to push the aileron back flush with the plane. In doing so it swings the weight out of the vertical, and a point of balance will be reached when the component of the weight which acts on the aileron will equal the wind pressure on it. There will then be a small righting moment on the aeroplane due to the weight having been shifted towards the high side, and an equal moment in the same direction due to the aileron.

The distance the weight is moved towards the high side is length of pendulum  $\times \sin \theta$  (angle pendulum is deflected).

I would ask Mr. Johnson whether he has seen the photos





of Mr. Cody's machine in flight with a passenger 10 ft. out from the centre line, and I would suggest to him that, unless he gives his pendulum such a large moment of inertia as seriously to encumber the machine by its weight or length, or both, it stands a very good chance of being entirely taken charge of by the ailerons, and in gusty weather, swung this way and that, with no regard whatever paid to the dignity of its position as stabiliser.

Pendulum control is much to be preferred to gyroscopic control, if only for the simple reason that no form of gyroscope (except the gyrocompass, which, by reason of its delicacy and its three-phase motors and other paraphernalia, is unsuitable for aviation) has any inherent sense of direction, so that if it wanders or topples from external causes or maladjustment it is quite unable to detect its error and return to its original direction. Any such pendulum, however, as could be fitted to an aeroplane would need some such "servo-motor" device as has been fitted in torpedoes for the last thirty years, by means of which a  $\frac{1}{2}$  oz. pull from the pendulum is magnified by compressed air into a pull of 180 lbs. on the diving rudder. It would, of course, be unreasonable to expect an aeroplane to carry a servo-motor (with its accompanying air-compressing plant) big enough to operate its ailerons, but I see no reason why it should not have an arrangement after this style: A small pendulum of very long period (e.g., that fitted in the well-known Mallock's rolling indicator) operating a rotary valve supplying air to a small servo-motor, which makes frictional contact between one of two strips and a drum on the engine shaft, the control wires of the ailerons being attached to the strips. In this way the engine would do the work of putting the ailerons down, and there would be no load on the pendulum. Air would be supplied to the servo-motor from a small pump driven off the timing-gear-shaft.

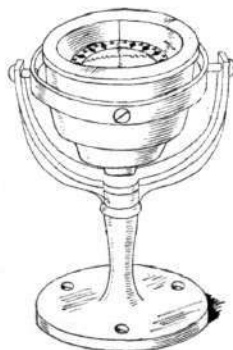
Gyroscopic control with electric contacts was tried for the moving saloon of the Bessemer cross-Channel steamer in the eighties. It was a failure, the reason, I believe, being that it was too slow, so that it actually increased the rolling; also, the gyroscope was defective.

R. T. G.

Portsmouth.

#### Aerial Compasses.

[1190] A recent article on compasses and the mishaps directly traceable to the inefficiency of those used, induces us to seek your consideration



A sketch of same is enclosed, and we shall be pleased to submit a specimen compass to you or any accredited aviator.

We would point out that the floating medium and the spring suspension employed are such that the vibratory influences are directed to doing no more than assist the magnetic forces. The card does not itself appear to the steersman as vibratory.

The spacing between the periphery of the card and the very desirable freedom from "dragging" effects. The markings, conjunction of card with lubber line and general proportions will be seen to be the most desirable. The non-magnetic parts are designed to afford all the strength which can be needed, and their material, Duralumin, gives the required lightness.

75, Duke Street, Liverpool.

W. BATTY AND SONS.

#### Aerial Bombardment.

[1191] I venture to think that there is some confusion of thought, or rather, perhaps, misapprehension of existing conditions on the part of those who are discussing the possibilities of the bombardment of targets on the earth from air-craft of all sorts.

May I point out that to consider gravely the possibilities of hitting an armed target such as a ship or a body of troops from a few hundred feet up is somewhat futile. An air-vessel cannot be considered

reasonably safe from rifle fire much under 5,000 ft. An aeroplane at present cannot rise much over 10,000 ft. Consequently there is a zone of rather more than 5,000 ft. from which an aeroplane can attack terrestrial targets without fear of being brought down by rifle-fire, and attention should be directed to the possibilities of making good practice from this zone.

Guns now existing for use against air-craft can throw a projectile to a height of 36,000 ft. and these guns will in the near future be supplied to ships and fortresses if attack from the air becomes formidable. An air-vessel must always take the risk of the fire from these guns at any height it may attain and they will probably forbid altogether the tactical use of dirigibles, although these unwieldy machines may yet have their uses for strategic reconnaissance and casual bombardments of unfortified places.

If the aeroplane bomb-dropper can make reasonably good practice at 5,000 or 6,000 ft., he will be quite sure of hitting when, if ever, he is lucky enough to get a shot at 500 or 600 ft., owing to fog or some exceptional stroke of luck. While on the subject, I suggest that the art of shooting at air vessels from the ground against the force of gravity, with all its difficulties, should be called "aerial gunnery." The utilisation of the force of gravity for dropping bombs on terrestrial targets would be better described as "aerial bombardment" or "celestial bombardment." I may say I have devoted some thought to both subjects, and if any firm of good standing is taking up the matter seriously an interchange of ideas might be to our mutual advantage.

R. A. (Retired).

#### The Dipping Front Edge.

[1192] Some time ago, you may remember, I sent you my views with regard to the subject of the dipping front edge (letter No. 1,036). I have since devised a simple experimental method of testing the question, which almost anyone, certainly any model maker, can easily try for himself.

An inclined wire was stretched tightly across a room. A species of trolley was arranged to travel down the wire by gravity. This was fitted with a sort of balance arm, pivoted by a needle fixed to its centre, so that when the trolley was on the wire the arm could move freely in a plane perpendicular to the wire. Two identical rectangles of tinplate were then fixed one at each end of the arm and the same distance from the pivot. These were then bent to form cambered aerofoils, one with the tangent to its front edge parallel to the wire, and the other with a dipping leading edge. The trailing angle was the same for each, being 40°. It will now be seen that if the trolley be allowed to travel down the wire, each aerofoil will exert a lift, the amount of which will depend on the velocity, area, aspect ratio, trailing angle, and also, presumably, the camber; and these forces will tend to turn the balance arm opposite ways. Of the determining factors, all but the last are the same for both surfaces, and therefore, if the arm turns the aerofoil which rises is the more efficiently cambered.

As regards the results, I tried a very large number of aerofoil shapes, but in every case the surface without a dipping front edge lifted more than the same one with it, except when the angle of dip was very small, when no difference was perceptible.

I confess that these results surprised even me, as I had expected simply to find that the lift was the same in each case. However, this is one more instance of the fact that it is unwise to prophesy in such cases.

Douglas, I. of M.

A. A. GRIFFITH.

#### The Clarkson Paddle.

[1193] I notice in your paper, Nos. 104 and 116, an interesting illustration and description of Clarkson's aerial paddle.

Although in principle apparently more efficient than an aerial screw propeller, there are, in my opinion, two reasons on account of which I believe the invention is not really a great improvement in actual practice.

This "direct lift" principle has been my pet idea or some time, and I have experimented on these lines a good deal. The data I have so collected lead me to conclude the following:—

1. That, although it may appear conducive to efficiency if, as in the Clarkson paddle, the blades acquire and again lose their velocity gradually, in actual flight the best results are obtained if the blades move at a uniform speed during their whole downward journey.

2. Similarly, the effective blade angle should, for the best efficiency, be constant during the whole downward movement, whilst during their upward movement the blades should be set at the natural angle of incidence created by the speed of blades and speed of machine. This, however, cannot be done with an eccentric motion. Why not try a cam?

By the way, is Mr. Clarkson aware that, so far as I can gather from material to hand, his idea is anticipated by Babillot in his patent No. 27,771 of December 21st, 1908?

Lagos, W. Africa.

R. FLEISCHBERGER.

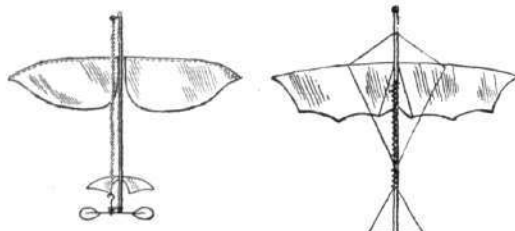
## MODELS.

### Penaud and Tatin Models.

[1194] "I was much interested recently when looking through a book named 'Scientific Recreations' (published by Ward Lock and Co. in 1883), to find a chapter devoted to model aeroplanes.

A certain M. Penaud constructed a model which we are told would fly for a distance of 70 yards and remain in the air for 13 seconds. It is evident that this model was not correctly adjusted for the various oscillations like those of sparrows or more especially woodpeckers can be plainly observed."

Another Frenchman, M. Tatin, constructed a model of the



M. Penaud's model.

M. Tatin's ornithopter.

ornithopter type which was a success. It was found necessary in this model to have the centre of gravity well forward. A full size machine, however, was not successful.

I enclose sketches of both models which it will be observed were driven by twisted elastic.

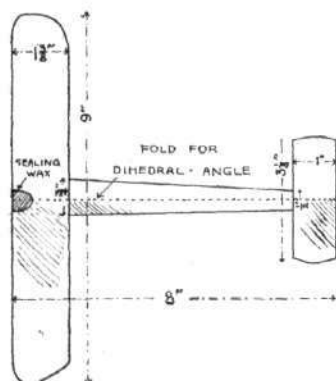
Cardiff.

HAROLD BEER.

[Penaud was the inventor of the elastic driven toy aeroplane.—ED.]

### Paper Model.

[1195] I am enclosing in this letter the sketch and dimensions of my Blériot type paper glider. The camber is obtained after the



sealing-wax has been put on. Writing paper or water-colour drawing paper may be used, and the glider is cut out whole.

Eastbourne.

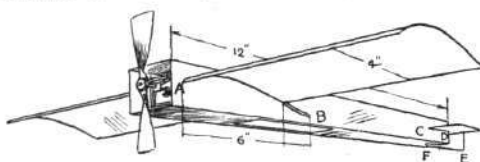
F. A. CAFFYN.

### Models and the Dipping Edge.

[1196] I have read with growing interest the many discussions in your interesting paper on the "dipping edge." It is quite possible to make a really good model for sixpence, and at the same time study the dipping edge very easily. All that is required is some stiff cartridge paper, seccotine, and a light elastic motor on a stick.

Fold a 1 ft. length of the paper in the shape of an elongated cone, as in the Blériot fuselage, cut the ends square, and take pieces out of top and bottom to relieve wind pressure. Next cut a long slit in either side, A B, 6 ins. long. Next cut out the wings, same as ordinary Blériot, 14 ins. long and 4 ins. deep. Insert through slit, A B. Now there will be two inches in which the wings can move freely, and so alter the camber. Tail and rudder are inserted in slits, C D, E F, for rudder. The motor is

just slung inside the fuselage by strings. In this model I found that when the leading edge was actually lower than the trailing edge, it flew further than when the position was reversed. Out of many



models which I have made this one flew best, looked best, and cost least.

Thanet Street.

GUY T. TAYLOR.

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- 10,947. J. RACLOT AND C. ENDERLIN. Flying machines.
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- 24,467. W. H. FITSGERALD, H. F. WYATT AND L. G. H. HORTON. SMITH. Rudder for air-craft.
- 23,759. R. HULLMANN. Navigable balloon.

### DIARY OF COMING EVENTS.

#### British General Events.

- July 1. — Gordon-Bennett Aviation Cup Contest.
- July 22-Aug. 3. Daily Mail Round England Contest.
- Oct. 31. — Close of British Michelin Cup.

#### Foreign Fixtures.

- May 28-June 15. Paris—Rome—Turin.
- June 18. — European Circuit—Paris, Brussels, London, Paris.
- July 11. — Paris—Bordeaux—Paris.
- July. — Italian Circuit.
- July 1-13. Circuit Berlin—Hanover—Hamburg.

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